Business

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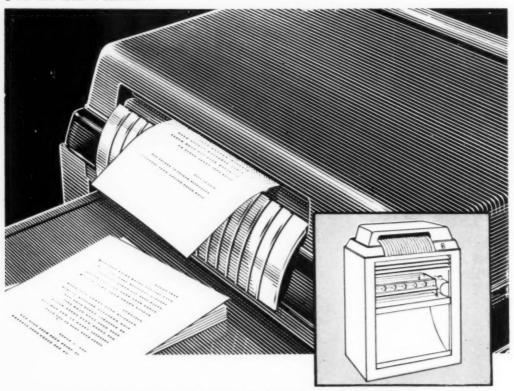
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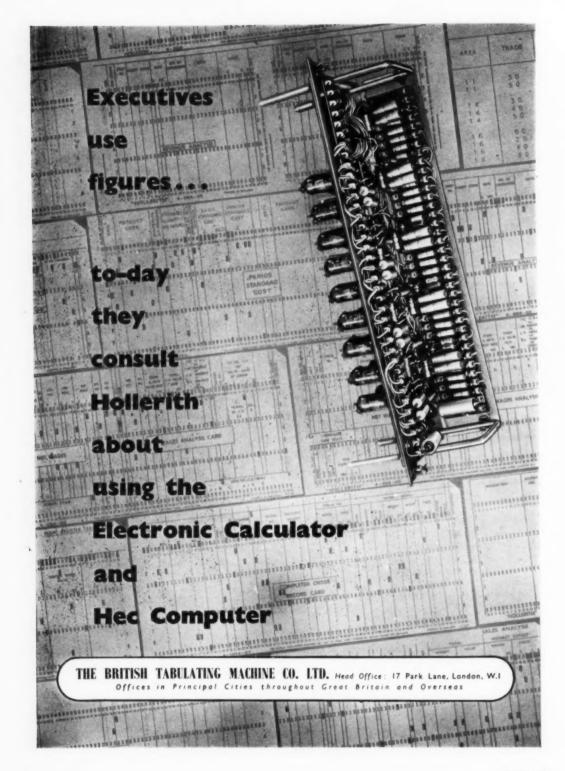
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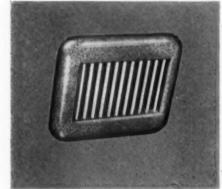
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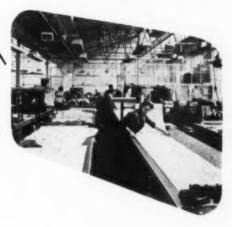








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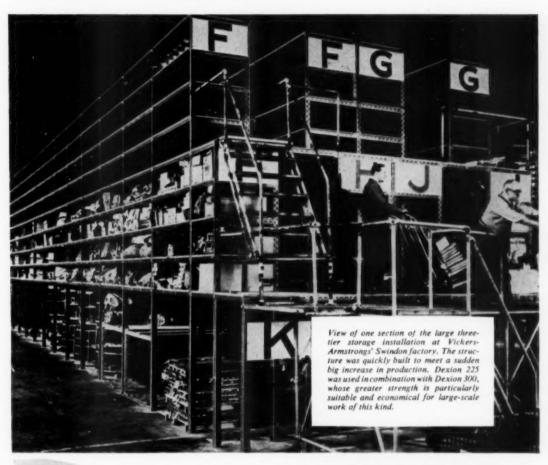
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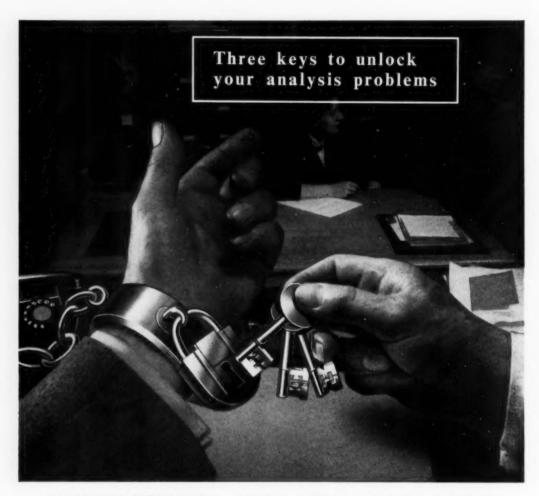






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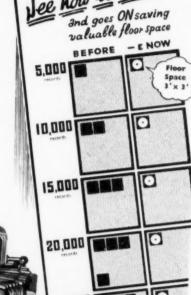
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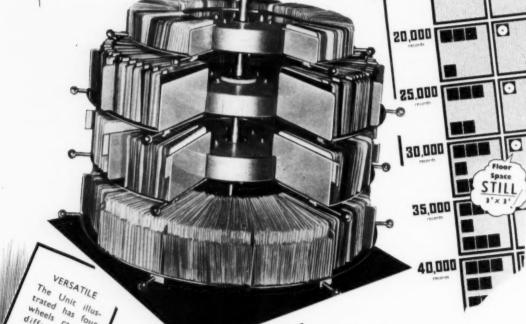
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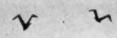
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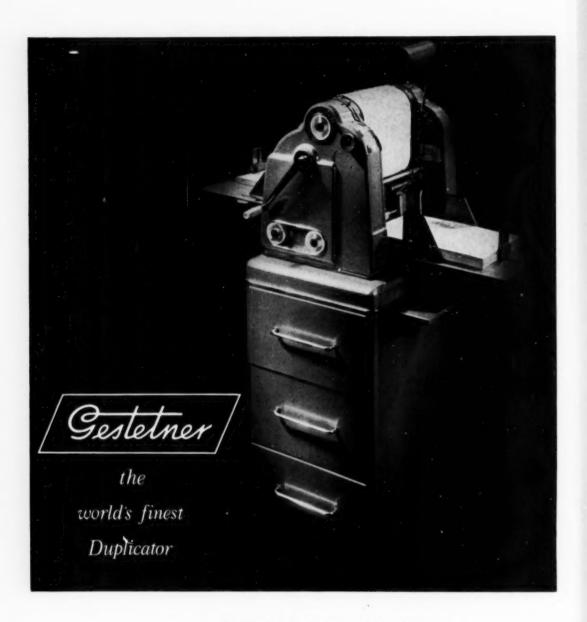
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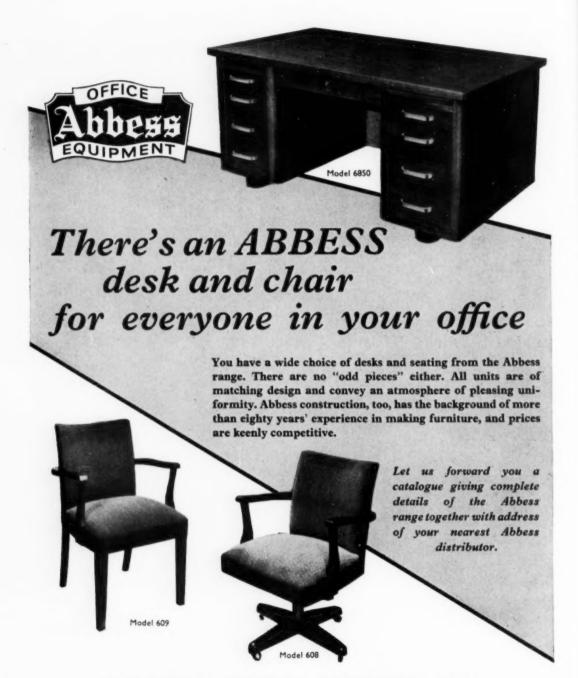
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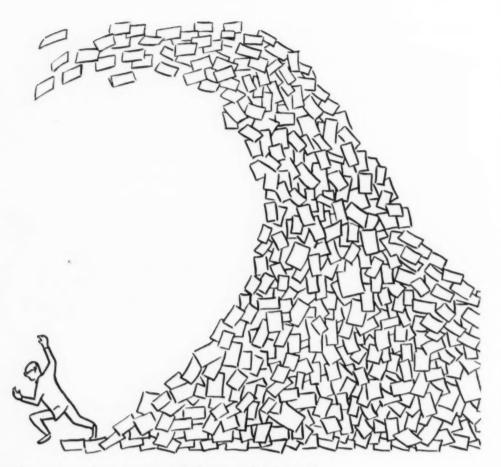
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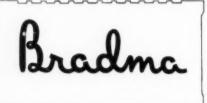
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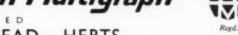
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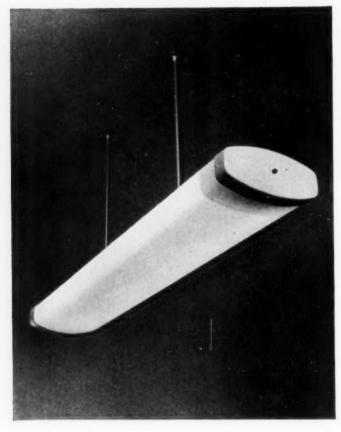




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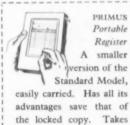
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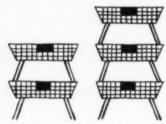
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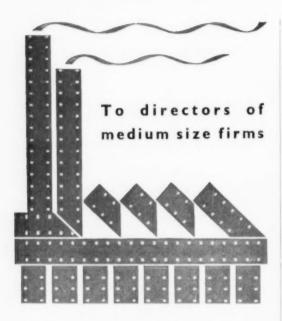
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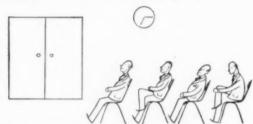


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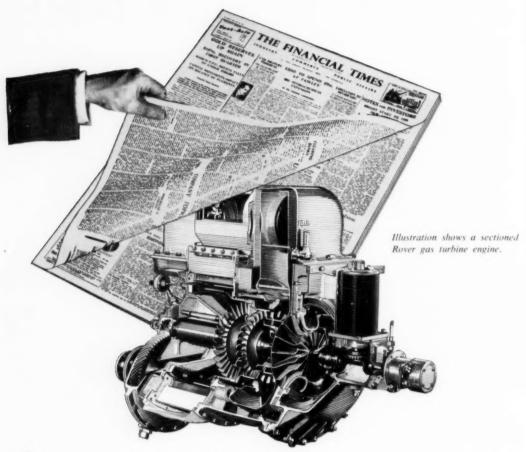




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BUSINESS

In

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#### SURVEY AND FORECAST OF BUSINESS CONDITIONS

The Essential Background to All Business Decisions is presented here in two ways. First, on this page the State of the Nation is depicted under four key heads—production, employment, the trade gap and the gold and dollar reserves. Second, on the following three pages the main economic influences on the State of the Nation are shown under five heads—trends in capital expenditure, consumer expenditure, government expenditure, monetary and financial policy, and market behaviour. For chart details, see footnote to this page.

#### SUMMARY

There should be an upsurge of production later this year and continuing into next year, when more of the factories built under boom conditions are completed. This may help to overcome the stagnant state reached in the summer when production was steady, employment still over-full in spite of the credit squeeze, and there was no leeway to accommodate such further inflationary factors as the Suez crisis and militant wage demands. Business outlook on the whole is good, with export prospects to industrial countries promising, though patchy for primary producing countries.

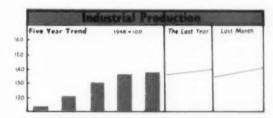
#### A-STATE OF THE NATION

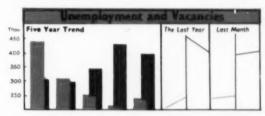
Industrial Production. During the period April to June this year, the average index of industrial production was 137 (1948 = 100). This was 21 per cent above the average level in the first quarter of 1952. During the last year, the average level of production has risen hardly at all, but the provisional June, 1956, figure of 139.40 is above the level of 136 a year earlier.

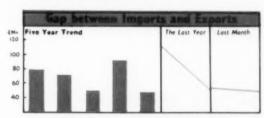
Unemployment and Vacancies. During the three months May to July, 1956, the average level of unemployment (colour bars) in the United Kingdom was 233,000. This represented a decline of 46 per cent on the level during the same period of 1952. By contrast, during the period April to June, 1956, the average number of vacancies (black bars) notified to employment exchanges was 398,000, and this represented an increase of 28½ per cent on the average level during the same period of 1952. Employment is still over-full. In July, 1956, there were 238,000 unemployed, and at the end of June there were 407,000 notified vacancies.

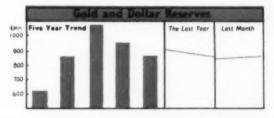
Gap Between Imports and Exports. During the three months May to July, 1956, the average monthly gap between imports and exports was £42.7 million. This represents a decline of 45½ per cent on the average gap during the same months of 1952, and it is lower than for the same three months in any year since 1952. In July this year, the gap was only £44.3 million, as against £107.9 million a year earlier.

Gold and Dollar Reserves. During the period May to July this year, the average level of gold and dollar reserves was £852 million, an increase of 41 per cent on the same period of 1952, but a decrease of 20 per cent on the same period of 1954. Since last December, however, the reserves have risen steadily by £102 million to £859 million.









THE CHARTS: Except where otherwise indicated, each bar chart depicts the average monthly value of a particular statistic during the most recent three months, and compares it with the same figure for each of the four preceding years. The earliest year in each case is shown on the extreme left. Under the heading "The Last Year," a straight-line graph depicts the latest month of a particular statistic and compares it with the same month a year earlier. And under the heading "Last Month," the most recent figure is compared with the one for the previous month. In both cases, the earlier figure is to the left and the later figure to the right.

#### B-MAIN ECONOMIC INFLUENCES ON THE STATE OF THE NATION

#### I.Trends in CAPITAL EXPENDITURE

Industrial Investment Plans. The accompanying chart ties the figures of industrial investment from the latest Board of Trade survey to past figures from the Economic Survey. The average planned quarterly expenditure on industrial investment in 1956 is expected to be about £466 million, an increase of 59 per cent on the actual average quarterly expenditure in 1952, and an increase of 21 per cent on 1955. In the first quarter of this year, expenditure at £422 million was down on the figure of £424 million for the fourth quarter of last year but well above the figure of £322 million for the first quarter of last year.

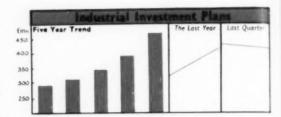
Factory Building Approvals. During the second quarter of 1956, the total area of factory building approved was 14.8 million sq. ft. This is 73 per cent more than was approved in the second quarter of 1952. But approvals in the second quarter of this year are 31 per cent below those of the first quarter, and 14 per cent below the same period of last year.

Machine Tool Orders. The average level of machine tool orders on hand during the three months February to April, 1956, was £103.8 million—only a slight increase on the average level of £97.0 million during the same period of 1951-52. In May, 1956, the volume of orders on hand was £104.8 million—equivalent to over 16 months' deliveries.

Industrial Hire Purchase. The accompanying chart is based on figures collected by Hire Purchase Information. The average monthly number of hire purchase contracts for the sale of new cars and commercial vehicles in the period May to July, 1956, was 14,571, over four times as many as in the same period of 1952, but a decrease of 2 per cent on a year ago. The industrial items in the Board of Trade's statistics show a rise in H.P. sales of plant and equipment between May and June.

Business Stocks. Bars in the accompanying chart show the change in value of stocks during each of the five years 1951 to 1955, as given in the National Income White Paper. The graph lines show changes in the index of stocks compiled by the Board of Trade. There was a 10 per cent rise in the value of stocks held by manufacturing industry between March, 1955, and March, 1956, and the index rose from 113 to 117 between December, 1955, and March, 1956.

Home Building Starts. Permanent houses started in the second quarter of 1956 totalled 86,168, an increase of 41 per cent on the same quarter of 1952, but a 7½ per cent fall on the second quarter of last year. The number of houses under construction in the second quarter of this year was 294,446, or almost as many as were completed in the same quarter of last year—294,811.



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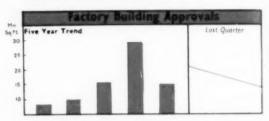
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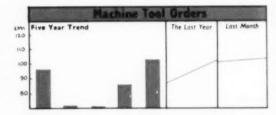
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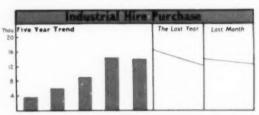
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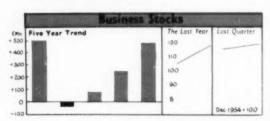
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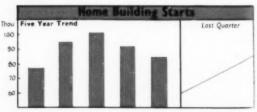
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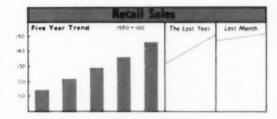
#### 2.Trends in CONSUMER EXPENDITURE

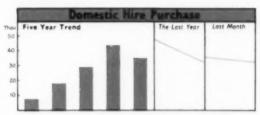
Retail Sales. During the period April to June, 1956, the average level of the index of retail sales was 145. This represents a rise of 27 per cent on the same period of 1952, and a rise of  $7\frac{1}{2}$  per cent on the same period of last year. In June this year, the index was 150, which is a substantial rise over 132 a year earlier, and also over the figure of 147 for May this year.

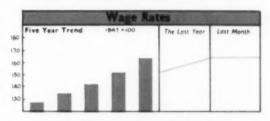
Domestic Hire Purchase. The accompanying chart is based on figures collected by Hire Purchase Information. It shows the trend of sales, by hire purchase, of used cars. Average monthly number of contracts during the period May to July, 1952, was 9,400, and the average number in the same period of 1956 was 35,500, or an increase of nearly 300 per cent. But it is also a decrease of 19½ per cent on the number a year ago. The domestic items of the Board of Trade H.P. statistics showed between May and June this year, H.P. sales of radio, television and musical instruments rose, and sales of home appliances were steady. But furniture and furnishings were down.

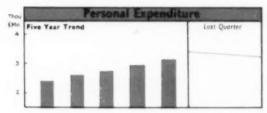
Weekly Wage Rates. In the period April to June this year the average index of weekly wage rates was 164. This represents an increase of 27 per cent on the average for the same period of 1952, and an increase of 8 per cent during the last year alone.

Personal Expenditure. Between the first quarter of 1952 and the first quarter of 1956, there was a 27 per cent rise in personal expenditure—from £2,436 million to £3,090 million. If allowance is made for higher prices, this represents a 10½ per cent increase in the real value of spending. In the last year, gross spending has risen 7 per cent, and real spending, after allowing for higher prices, by 2 per cent.





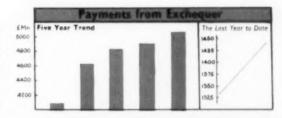


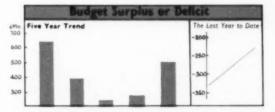


#### 3. Trends in GOVERNMENT EXPENDITURE

Payments From Exchequer. In the calendar year 1951, Government expenditure was £4,059 million. In the calendar year 1955 it was £5,082 million. This is an increase of 25 per cent. During the same period, prices rose by 19 per cent, so that in effect Government expenditure, in real terms rose by 6 per cent. So far this financial year, Government expenditure is slightly ahead of expenditure in the same period last year.

Budget Surplus or Deficit. The accompanying bar chart shows the Budget surpluses in calendar years 1951 to 1955. These are the above-the-line surpluses. The graph line compares the current financial year with the previous one. At this time of year, the Government is generally running a slight deficit. So far this financial year, the deficit is slightly less than in the same period last year.

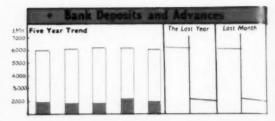


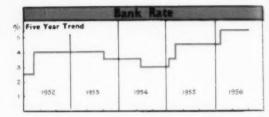


#### 4.Trends in MONETARY AND FINANCIAL POLICY

Bank Deposits and Advances. During the period May to July this year, the average level of bank deposits was £6,200 million. This was a slight increase on £6,000 million for the same period of 1952, but a decline of 3 per cent on the level of £6,400 million in the same period of last year. Bank advances this year during the period May to July were at an average level of £1,900 million, about the same as in the same period of 1952, but 9 per cent less than the level of £2,100 million a year ago.

Bank Rate. The accompanying chart shows the movement of bank rate since the beginning of 1952. In March of that year, it was raised from the long-standing rate of 2½ per cent to 4 per cent. It later went down to 3 per cent but is now 5½ per cent.





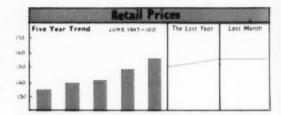
#### 5.Trends in MARKET BEHAVIOUR

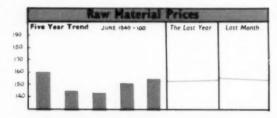
Retail Prices. In the period April to June this year, the average level of the retail price index was 157. This is a 15½ per cent increase on the average level of 136 in the same period of 1952 (1947–100). The index for June this year was 156, or an advance of 6 points (4 per cent) on the level a year earlier, and a fall of 1 point on May this year.

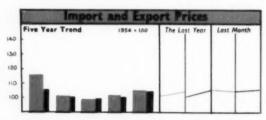
Raw Material Prices. The average level of the index of basic materials used in non-food manufacturing industry, during the months May to July this year, was 155.5. This was 3½ per cent below the level during the corresponding period of 1952, but 2½ per cent higher than the same period last year. In July this year, the index was 154.1, a rise of 0.3 points on a year earlier but a decline of 1.1 points on June.

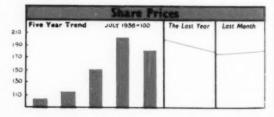
Import and Export Prices. During the three months April to June this year, the average level of the import price index (1954=100) was 106. During the same period in 1952, the average level was 118. There was a decline, as the chart shows, to 100 in 1954, and there has since been a modest rise. In the three months April to June this year, the average level of the export price index was 105. This was one point below the average level for the same period of 1952, but 4 points above a year ago. In July this year the import price index fell to 103 and the export price index was steady at 106.

Share Prices. During the months May to July this year, the average level of the *Financial Times* index of industrial ordinary share prices was 181.7. This represented a 69 per cent rise on the average level of 107.5 in the same period of 1952, but a fall of 12 per cent on a year ago. In the middle of August this year the index was close to the July average level.











# Sir Andrew's Assurance

Sir Andrew has many responsibilities, but they sit lightly on his shoulders, because years ago he discovered the value of delegation to experts. He always has time to devote to the big issues because he is never overloaded with detail.

Like many another important executive, he retains the services of the Noble Lowndes Pension Service. When their advice was first taken, Sir Andrew's companies had a patchwork of ill-fitting pension schemes, and he himself was a controlling Director with no retirement provision, but a large prospective Estate Duty liability.

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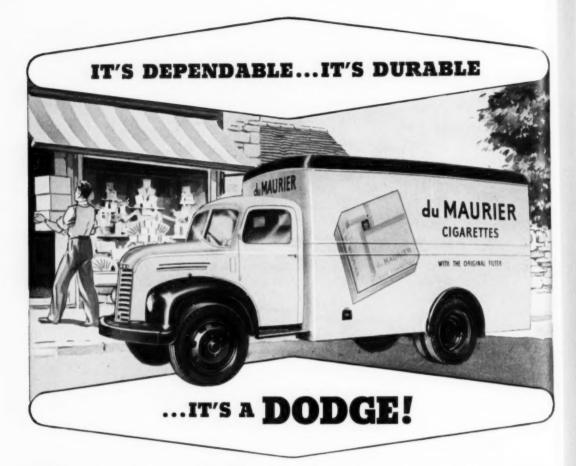
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Because of these higher standards of quality manufacture, it is not to be expected that Dodge is the cheapest truck obtainable. But for the additional outlay you get much in return . . . the performance you want . . . the operating economy you like . . . and the durability you need.

Models from 2 to 8 tons · Petrol and Diesel





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## HOME MARKET SURVEY

A Round Britain Survey: Regional Notes on Markets and Industrial Developments

#### NORTH-WESTERN

Most firms in the engineering and allied industries have plenty of work on hand although in some cases order books are lighter than in earlier months this year. The general level of activity is high, and a number of large contracts have recently been secured. One effect of the recession in the Midlands motor car industry has been a reduction in working hours of firms making batteries, brake linings and tyres.

The leathercloth trade, too, is feeling the decline in car and furniture business and further redundancy is feared this autumn. On the whole, however, there are still more engineering vacancies than skilled men to fill them. New industries are still needed in parts of the region, according to the latest report of the Lancashire and Merseyside Industrial Development Association who view the growth of industry in the South with disquiet, as it results in workers being drawn away from the northern districts.

Demand for steel, particularly for sheet, plates and structural material, continues strong, and consumption of nickel and other special alloy steels is heavy. Manufacturers of machine tools are fully occupied as are heavy electrical engineering concerns. Locomotive builders are busier.

Conditions in the chemical industry are brisk. The same cannot be said about cotton textiles where output continues to fall and exports during the first quarter of the year registered a decline to 120 million sq. yds., compared with 129 million sq. yds. in the last quarter of 1955.

Nevertheless, technical progress continues to be made. At a recent meeting of the Overall Manufacturers' Association Sir Raymond Streat, chairman of the Cotton Board, said: "New finishes are being developed which when applied to a fabric skilfully designed to suit the end use can and do make fabrics vastly superior in appearance and durability to those used by our fathers and mothers."

The Calico Printers' Association have just put on the market two new cotton fabrics for use in tropical climates, and if demand justifies it, are planning to expand output considerably.

W. T. Winterbottom, chairman of the spinners' section of the Rayon Staple Spinners' and Doublers' Association, takes an optimistic view of the out-

look on the rayon spinning side. Order books were, he said recently, considerably larger than 12 months ago, and spinners were playing an important part in improving the technical qualities of their products and in experimenting with new fibres.

Output of rayon staple and cotton yarns, which before the war hardly existed, is now running at an annual rate of 37 million lb.

Companies are continuing their programmes of re-equipment and modernization of plant. Fothergill and Harvey Ltd. have completed extensions at Harvester Mill, St. Helens, and the quantity and range of the *Tyglas* industrial fabrics produced there are expanding.

Brocklehurst-Whiston Amalgamated, of Macclesfield, have concentrated the spinning of manmade fibres at their Ormerod Bros. mills in Brighouse where they have reorganized buildings and machinery, improved the amenities for the workers and installed the latest British spinning plant together with a U.S. machine for the production of yarns from a continuous tow.

The new Cheadle Heath condensor spinning plant of Fine Spinners and Doublers Ltd., Manchester, has made good progress and one-third is



The vertical line at 100 represents the national average level of retail trade for the latest month (June). Against this average the performance of each region may be measured

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#### THE GENERAL LIFE ASSURANCE COMPANY

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now in production. Production on another third of the plant will commence shortly.

New plant has added to the productive capacity of the dyehouse of Burgess, Ledward and Co., Manchester, and new weaving and winding machinery has enabled production to be increased considerably at lower cost and with improved quality standards. Plans have been made for the modernization of a further weaving shed.

Textilose Ltd., of Liverpool, have completed the removal of their spinning plant from Blackburn to a new factory at Rishton which is now in full production. About half of the Bury Felt Manufacturing Co.'s £80,000 capital expenditure programme has gone on new buildings and the provision of modern boiler plant at Bury. The balance has been spent on additional and improved processing equipment including machinery for the production of tufted carpeting.

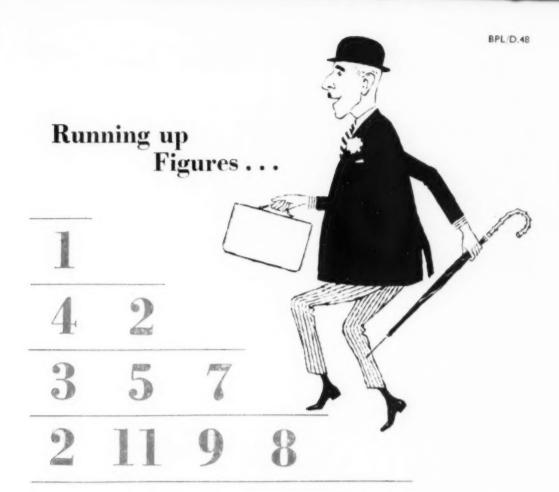
The new premises at Helmshore for T.M.M. (Research) Ltd. are virtually completed, and the major rebuilding project at Hartford Works, Oldham, of Platt Bros. and Co. is well in hand. A new works to be built for the Longclose Engineering Co. will provide an additional 50 per cent production space.

The British Northrop Loom Co., Blackburn, are reviving and increasing the output of machine tools and other equipment, both in castings and in the finished article, in order to utilize production capacity to a higher degree.

Output at the Leyland Motors' plants continues to rise: for the first half of this year it was up by 13 per cent, compared with the corresponding period of last year. The company are to buy the Government tank factory at Farington, Lancashire. They have recently completed the first instalment in a series of plant extensions by establishing a new 30,000 sq. ft. machine shop.

B. and S. Massey, the engineers and drop forgers of Manchester, report that they have enough work on hand to keep the company occupied until 1958. With a healthy order book, Eva Bros. Ltd., Clayton, Manchester 11, are initiating a capital development programme with a view to increasing their productive capacity.

Wm. Neill and Son (St. Helens) who have brought into service at Bold a new shop for assembly, inspection and testing of equipment for the petroleum and chemical industries, and have installed facilities at Parr for shot-blasting and metal-spraying, are currently laying down foundations for a new 30,000 sq. ft. assembly shop and have secured the freehold of further land around



There's more to running a business than adding up and taking away. More important than the ability to read a balance sheet are those everyday matters which may well affect the next balance sheet—output, speilage, absenteeism. And each of these can be influenced by the paint on the factory walls! The sub-conscious reaction to colour in the places where people work is of such vital importance that we have created a Colour Advisory Service. Its purpose is to assist managements who are willing to make their painting programme productive.

Artists trained in the principles of colour planning will survey your premises and submit perspective drawings in colour of their recommendations. It is a free service, involving no obligation upon those who invite our co-operation.

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May we help you?

For details write to

COLOUR ADVISORY SERVICE

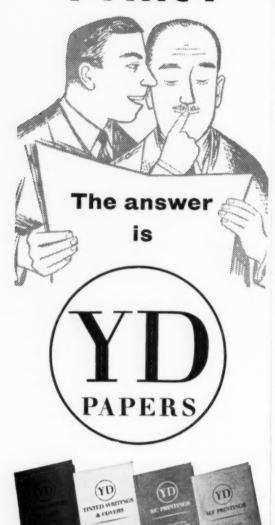
#### BRITISH PAINTS LIMITED

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# **Planning** Print?



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the Bold works for later development.

The Metal Box Co., who have built new research laboratories at Speke for development of laminates. are now operating at their new open top factory at Westhoughton, Lancashire.

Simon-Carves Ltd. have in hand a record number of contracts, among them a £15 million order for a steelworks at Durgapur. All the firm's main departments are involved in this work which will be spread over the next four years. Other new orders on which work is proceeding are for new coke oven batteries for the Indian Iron and Steel Co. and a £1.25 million contract for coke oven reconstruction for the Tata Iron and Steel Co.

Also expected soon is a £4 million contract from the Steel Company of Wales for a further coking plant extension at Margam. After considerable development work, the G.E.C. Simon - Carves Atomic Energy Group is now in a position to produce joint tenders by October 1 for the C.E.A.'s two atomic power stations at Bradwell and Berkeley.

To accommodate the company's nuclear power department a new extension is being completed at the Cheadle Heath works.

Craven Brothers (Manchester) Ltd. are now operating their new temperature-controlled department where they are now building a special line of precision machine tools in the same conditions under which they will be operating.

The entry of Glover and Main Ltd. into the refrigeration field has come at a difficult period, and although they have commenced the erection of a new refrigerator factory at Padiham, the project is not to be completed until the pattern of future demand becomes clearer. The plant is adjacent to the works of Morley Products Ltd., whose expanding washing machine business has been assisted by the provision of a 50,000 sq. ft. extension incorporating a new office block.

The Superheater Co. are expanding their Trafford Park works.

Ferranti Ltd. are now manufacturing electronic computers in a 300,000 sq. ft. plant which they have acquired at Ardwick, Manchester, from Brooks and Doxey Ltd. Switchgear and Cowans Ltd., Old Trafford, have stepped up their research and development work to enable the company to be ready with new and improved designs for 1957.

The addition of 120,000 sq. ft. to Ekco's Burnley factory has been completed and production is taking place.

As a first step towards meeting the increasing demand for ethylene and propylene derivatives, Petrochemicals Ltd. are expanding their Partington plant, near Manchester.



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### **EXPORT MARKET SURVEY**

A Round-the-World Survey: Country by Country

#### SOUTH AFRICA

THE business barometer is still set fair for the Union of South Africa—the gold, diamond and uranium member of the Commonwealth which in 1955 took over £166 million worth of U.K. exports and has during the past few years also provided this country with one of its biggest overseas outlets for investment and industrial enterprise.

During his recent visit to London for the meeting of Commonwealth Prime Ministers, Premier Strijdom spoke of the need, "in our common interest," to expand and strengthen mutual trade and other economic relations. "I trust," he said, "that the U.K. will be able to continue to play its traditional role of provider of capital."

In the past nine years the Union's economy has benefited by British investment alone totalling some £500 million, but the position has now changed radically. Whereas in 1954 the net capital inflow into South Africa was £55 million, last year it had dwindled to £8 million. There have been many contributory factors-among them political considerations, the unfavourable market in gold shares in London and the recent restrictions placed on the outward movement of South African capital. But at the same time it is instructive to note the increasing degree to which the Union is providing its own capital requirements. The country's reserves are now well above the "working minimum" of £80 million, and it is to be hoped that J. F. Naude, the new Minister of Finance, may feel that improvement in the balance of payments position gives him the right kind of support for measures designed both to increase the Union's attractiveness as a field of investment and its import opportunities.

South Africa, which has sufficient resources to keep it busy for the next 100 years and whose national income should be in the region of £2,000 million in 10 years' time, offers great business openings for Britain today. Mining activities are expanding, agriculture is being mechanized, deficiences in electric power supply and in transport facilities are being made good, and basic and secondary industries are being enlarged.

For the South African Iron and Steel Industrial Corporation, Ashmore Benson Pease and Co. are constructing a £1 million complete blast furnace in Pretoria. To meet expanding railway requirements a £7.2 million contract for railway coaches has been placed with Metropolitan-Cammell Carriage and

Wagon Co. and an order for 60 heavy electric locomotives with English Electric.

The South African Railways and Harbour Administration have ordered two tugs, worth over £830,000, from Ferguson Brothers (Port Glasgow). With a view to handling additional tonnages of South African fruit, the Union Castle Co. have placed orders, worth around £2.5 million, with Greenock Dockyard for two new fully-refrigerated cargo liners, for delivery in 1959-60.

Automatic Telephone and Electric Co. are supplying 26 sets of vehicle-actuated traffic signals as part of a major traffic reorganization plan now being undertaken at Durban where W. J. Fraser and Co. are to erect a large-scale oil blending and packing plant and a grease manufacturing plant for the Shell Co. of South Africa.

The Jan Smuts Airport, Johannesburg, is soon to have new VHF communications equipment and airfield radar made by Marconi, a company who have supplied nearly £250,000 worth of radio equipment for the South African Broadcasting Corporation's biggest station at Paradys in the Orange Free State.

Since 1947, expenditure on building construction has been well over £500 million. In step with the general slackening expansion rate in industry, which has for months past been a feature of the Union's economy, the building industry, too, has declined in activity. Whereas during the first half of 1955 building plans passed in the nine main urban areas totalled £39.8 million, for the first six



Nine transmitters supplied by Marconi's Wireless Telegraph Co. Ltd. for the South African Broadcasting Corporation's biggest station at Paradys, O.F.S.

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months of this year they only amounted to £31 million in value.

Completion of various major capital projects has also tended to slow down construction activity. Nevertheless, a number of long-term schemes are now being put in hand. The Railway Administration, which has already spent over £300 million on developments during the past 10 years, is launching a £200 million, five-year modernization and improvement plan with the object of keeping the railway system abreast of the country's industrial expansion. Main lines are to be electrified and tracks doubled; new workshops built for repairing rolling stock; and over 260 steam, electric and diesel locomotives put into service, together with 24,500 new trucks, 900 main line passenger coaches and 800 suburban coaches.

More than 150 motor coaches are also to be provided to deal with traffic of the Rand, Pretoria and Cape Peninsula. Last year South Africa spent about one-quarter of its total imports bill—some £100 million—on vehicles, motor accessories, etc.

Due to the increasing contribution of the Orange Free State mines, the value of the Union's gold output has reached record totals. A number of recently established mines have not yet achieved their planned production, and several—such as Free State Geduld, Merriespruit, Vaals Reefs and Buffelsfontein—have yet to start, while it is possible that within the next few years five entirely new mines may be extablished on the gold field in the Bethal area of the Eastern Transvaal.

Already 16 of the 24 mines that have been admitted to the uranium production programme are in production, and exports of uranium and thorium are now well over double last year's figures. Output may, in due course, be worth more than £53 million a year to the Union.

Landmarks have been the coming into operation—though as yet at a reduced level—of the Government-sponsored oil-from-coal plant (Sasol), which is designed to yield one-sixth of the Union's annual requirements of petrol, together with large quantities of diesel oil, fuel oil and chemical by-products; and the Industrial Development Corporation's new £1.75 million phosphate plant at Phalaborwa in the Eastern Transavaal Lowveld.

As a result of new electric power installations and extensions to existing stations, total output is now not far short of double the 1948 figure. Demand, though, continues to rise. Some £7 million worth of equipment will be required for the new Cape Town power station which is to be built at Athlone Completion date is 1960.

# STANDARD STORAGE BUILDINGS



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Top illustration shows part of the works recently erected at Enfield for Thorn Electrical Industries Ltd., bottom illustration a storage building for Duple Motor Bodies Ltd., at Hendon. By basing their design on the plastic theory, Sanders & Forster, Ltd., have achieved maximum strength with minimum overall weight of steel, thus providing the most competitive type of storage buildings. These are available in a multitude of combinations of various standard spans to suit every possible requirement. You should write for standard literature.



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# One man helped this confectionery firm to overcome invoicing delays



Bensons' deliveries sometimes had to wait for invoices—but the Burroughs man, Mr. R. Sudall, was able to suggest a quicker system using Burroughs Sensimatic accounting machines.



BENSONS Confectionery Ltd., of Bury, have a large home and export confectionery trade. Last year, deliveries were hindered because loaded vans were kept back while invoices were being prepared. More staff were put on the work, but there were still delays during peak periods.

Bensons contacted Burroughs, who sent one of their team of accounting experts, Mr. R. Sudall, who, together with Bensons' accountants, made a thorough analysis and suggested a system using two Burroughs Sensimatic accounting machines.

Now, invoices are prepared in *one operation* direct from travellers' orders. Each machine prepares 30 to 40 invoices an hour, and loads now go out on time. Bensons are already coping with a 50% increase in activity, and anticipate further orders through their prompt deliveries.

#### WHATEVER YOUR BUSINESS

If you have an accounting problem, the Burroughs man can help you. He is an expert on modern accounting systems, and well able to work with accountants or auditors. Backed by Burroughs' world-wide experience, he will make a full analysis and suggest the most economical, work-able solution. If he thinks no change advisable, he will say so; if he does recommend a change, he will make a detailed plan and help you get it working smoothly. Call in the Burroughs man—you're committed to nothing. His advice is free.

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CALL IN THE Burroughs MAN



#### MORE LIKE THIS, PLEASE

AFTER the Duke of Edinburgh's Study Conference ended at Oxford. BUSINESS went to some trouble to find out what the 280 delegates really thought of it. And our conclusion is that the conference was successful beyond all possible expectations. Both the U.K. delegates and those from the overseas countries of the Commonwealth felt that they had learnt a lot-perhaps even too much. But even more important was the general impression that they took away, and in many cases the new outlook they developed towards other people and other problems.

In theory at least, the conference could have gone wrong. For example, when delegates went on tour. no attempt was made to show them only the very best in British industry. The more nationalistic-minded delegates from abroad could have gone home with a critical attitude towards British shortcomings. Likewise, half the delegates were trade union representatives, and this in itself created a danger that there might be "ganging up" into two opposed factions.

In the event, neither of these things happened. Although in the first day or two some delegates were suspicious of the motives behind the course, before very long, new attitudes began to pervade all members of the conference-attitudes of informality, goodwill and frankness towards each other, humility towards learning and towards what they didn't know.

Delegates were divided into groups of 15, of different nationality and industrial background, who really got to know each other during the conference and tours. After each plenary address, the conference would break up into groups who would fire questions at each other, instead of at

thus shared experiences.

One of the riskiest, but in the event most successful features of the conference was the series of industrial tours undertaken by the groups. During these, both management and workers' representatives at the factories and offices visited, allowed themselves to be put though a very frank form of "third degree" as to what they did, why they did it, and what they didn't do. This proved stimulating and useful to those who were "grilled" as well as to their

the speaker on the platform. They Press reporting, but in the latter stages of the conference, groups met together in threes to prepare reports on specific subjects, such as "Incentives and Promotion."

> The reports, together with the main conference papers, will be published next January by Oxford University Press at 42s. Meanwhile in November a more personal discussion of the conference theme, by Laurence Thompson, will be published under the title "The Challenge of Change" (Oxford, 5s.)

It is only to be hoped that there visitors. These sessions were not for will be a repeat conference in Britain

#### HIGHLIGHTS OF THIS ISSUE

- Why do graduate trainees get bored and restless? A new approach to their training . . .
- Ceramic cutting tools promise faster, better and cheaper machining. Plain-language guide to this workshop revolution . . .
- Techniques of 'democratic management' can increase efficiency. Report on special BUSINESS tour of the American Middle West . . . Page 89
- New techniques in the factory can make it necessary to build an entirely new management structure. Case history . . . Page 111

#### Next Month

AIR FREIGHT. How it can save money. A realistic assessment of its future possibilities.

SELLING TO AMERICA. Case history of a new product. aimed successfully at the American market by a medium-sized British firm.

before many years have elapsed, and perhaps other similar conferences in the overseas Commonwealth. Many of the delegates at least intend to try and make this happen.



XPORTS of office equipment in the first half of this year were valued at £12.1 million, an increase of £1.8 million on the same period last year.



#### MONEY FROM UNUSED BRAINS

TRULY astonishing method of A TRULY astonishing improving the efficiency of a business has lately been developed in the United States. It involves getting a much faster flow of good ideas from executives and workers-much faster than could ever come from the solitary thoughts of each executive, or from the normal boardroom discussion.

This new method recognizes two important facts about human nature. First, that although the brightest people may be capable of thinking of the greatest number of good ideas, in fact everybody is capable of thinking of some. If a number of people sit together in a room, and are asked to concentrate on a particular problem, they may produce as many as ten times the number of good ideas that a single executive could produce if he were detailed to solve the same problem on his own. Ideas will come from the most unlikely members of the group, and what is more, members will stimulate each other, so that even a bad idea may be improved on by another member and made into something really useful.

Second, the right atmosphere for this type of thinking is all-important. Useful ideas are so often stifled before they reach the lips, for fear of being criticized or ridiculed. One of the rules of the new technique of "brainstorming" is that there must initially be no criticism or ridicule of ideas put forward. The important thing is to get a good flow of ideas. If 20 or 30 are forthcoming, it will be easy to go through them later and strike out all the impossibles.

in thinking about and discussing company problems, they will work better anyway. And second, there tapping unused brains.



CIRMS wishing to exhibit at the Brussels International Exhibition, 1958, should make their intentions known to the Federation of British Industries, 21 Tothill Street, London, S.W.1, before the end of September this year. That sounds early, but the exhibition in Brussels will be the first of its kind since before the war, and there will be nothing similar in Europe for at least another six years. Fifty nations are participating, each with their own pavilions, which have to be planned and in course of erection by early scheduled dates. Inside space in the British industrial pavilion costs £6 10s. per sq. ft. gross for the six months, April 17 to October 19, 1958, that the exhibition will be open. Some 30 million people are expected to attend.



NO TURKEY ON THE TRAIN MODERN science can sometimes be of doubtful benefit. So thought about 50 journalists invited to witness the starting of a new tonnage oxygen plant in South Wales, erected by the British Oxygen Co. to supply the nearby Steel Co. of Wales. (See note on page 96.) For this time the journalists were not taken to Wales to see the new plant in real life. They were invited to the oxygen company's London headquarters to see the new plant start up on closed circuit television. In their presence, Mr. Gwilym Lloyd-George, Home Secretary and Minister for Welsh Affairs, pressed a button, and they saw the plant in Wales begin to operate.

Brainstorming is a sort of group executives stood by to take them suggestion scheme, and it has the on a tour of the plant by television. same advantages as all well-run sug- Unfortunately, it was raining at the gestion schemes. First, that if em- time, and someone got his lines wet. ployees are encouraged to participate. The sound effects were quite unintelligible, and much of the tour was meaningless. When it came to question time, and members of is good money to be made out of the audience in London attempted to ask questions, which were to be answered by experts in South Wales. the session became quite comic. For technical jargon was so easily misinterpreted.

Such light relief could not, however, compensate members of the



The Home Secretary started the new oxygen plant by remote control. But TV lines got wet

Press for loss of an old-fashioned trip into the country, to see the new plant in person, with a turkey lunch on the train. Perhaps the moral of this story is that public relations does not take too kindly to the scientific approach. The personal approach is still tops.



BEGINNING Tuesday, October 2. there will be a series of nine weekly sessions on "Electronic Computers and Management Control," in a new course for senior executives at the North-western Polytechnic.



#### KEY EXECUTIVE COURSES

HOW long can a key executive be "spared" from his work, to Then, at the other end, leading attend a course? No time at all, if B.B.C. commentators and company the firm is badly run. But let's be



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frank. Annual holidays generally last at least a few weeks, and most executives do manage to get away for a holiday. So perhaps they could be spared for another three weeks at some other time of the year ?

That is the reasoning behind the courses planned by the Sundridge Park Management Centre at Bromley, Kent. The inclusive fees for the three-week residential course on "Measurements for Management" are 125 guineas. And as usual, much of the initial support for the course came from the big firms who have a steady policy of sending executives on any courses which are likely to benefit them, and which these firms could not economically conduct on their own premises.

But the "Measurements for Management" course should really be of most value to the head or near head of a smaller firm-if only he could be persuaded to tear himself away for another "holiday"-this time in an historic mansion overlooking a golf course

Most small firms are fairly specialized in their products. They were founded by men who had particular bees in their bonnets-new ideas about weaving, engineering, catering, publishing, decorating or some other developing activity. The long suit of the small firm is generally its special line, carved out by its founder. But the weak point is usually lack of knowledge of modern methods of measuring and controlling output, work, capital, stores, markets, etc.

#### **ERRATUM**

AT the top of the third column on page 82 of the August issue, an increase in retail prices of 31% was incorrectly printed as 3%.

#### NEW SLANT ON FINANCE

ESSO Petroleum Co. have gone one better than most other firms, in explaining the company's finances to employees. They have engaged Mr. Harold Wincott, the celebrated

SEPTEMBER, 1956

## FTRUER

# 23000673

CHAMPION OF WALES-A. G. B. Owen, chairman of the Owen group of companies, has joined the executive committee of the Welsh Economic Development Council. "I have been impressed." he says, "by the success of the Scottish Council in attracting trade and industry from across the seas, and am convinced that Wales needs a comparable body. . .





EXECUTIVE COMFORT—The first Lumenated ceiling to incorporate a fully automatic air-conditioning system has recently been installed in the board room of the Thermotank Group, Glasgow. Light diffusing vinyl sheets completely mask all air trunking and electrical wiring, yet allow easy access for maintenance.



ON THE SHELF-To cope with the mid-day rush in their stationery shops, H. J. Ryman Ltd. have opened Britain's first self-service store for this field in Bond Street, W.1. Over 5,000 items are stocked on the shelves, while special bays deal with office furniture and machinery, print ordering, etc. If successful, it is hoped to extend the idea to other branches.

financial journalist and editor of the *Investors' Chronicle*, to write a series of illustrated articles for their house journal, *Esso Magazine*. The series, now completed, traces the birth and growth of a small imaginary company, founded in "a second-hand Nissen hut," until today it is a giant public company.

This is a suitable occasion to point out that when a prosperous firm decides that they would like to have a painting or a colour photo of their new works, they do not think of asking, say one of their executives to do the job in an odd moment. They commission an outstanding artist or photographer. It is therefore interesting to see a leading company treating the provision of financial information for its employees as of equal importance to the provision of a boardroom painting, and engaging a top-notch professional man to do the job properly. This puts industrial relations in its proper perspective.



That there is a great hunger for financial and economic information, clearly and attractively presented, was demonstrated by our own humble attempt, in the May issue of BUSINESS, to present "The Facts of British Economic Life." Copies of those charts were offered to readers at 3d. each, for placing on works notice boards, and the immediate response was modest, but good enough. About 300 charts were ordered in the first few weeks of May.

But among those was an order for 12 from the Engineering and Allied Employers' Liverpool Association, who at their next executive meeting decided to order more copies-one for each of their member firms. When headquarters of the Engineering and Allied Employers' National Federation heard of this, they decided to send one copy to each of their 50 branches, who in turn then began to order more copies for their members. And more recently, other employers' associations have become interested, so that the orders now total over 2,000, and they are still coming in.

# PRODUCTS

## PLACES 2

OFFICE EXPERT—L. M. Nation-Tellery recently retired from the board and general managership of Sumlock Ltd., after being associated with the firm from its inception 16 years ago. But he continues an active business life. He has gone into practice as a specialist consultant "on the application of machines to business arithmetic."





SHOWMANSHIP—This stand was put up in only one hour, using prefabricated panels made by Acme Showcard and Sign Co. Ltd. Screen units are employed, based on a framework of metal tubing to both sides of which the panels may be clipped. The new method is claimed to provide higher versatility at lower cost, compared with conventional construction methods.



HIGH-LEVEL FINANCE—Recently opened at Cardiff was this first-floor branch of Barclays Bank Ltd. An escalator connects the premises with a foyer at street level. It is the first time that the traditional ground floor position has been abandoned by a bank in this country. If the experiment proves successful another escalator branch may be opened at Birmingham.

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# TALKING POINTS

# PROFESSIONAL INSTITUTES Have They a Dual Role?

In response to our editorial note on the "in-between man" in the July issue of Business, Mr. D. G. Petrie, chairman of the Institution of Works Managers and production director of Star Paper Mills Ltd., has pointed out that the professional institution can and should perform a dual role—to maintain and improve the professional standards of their members, and at the same time help their members to maintain or improve their financial status.

This latter role cannot be carried out by pressure group tactics, in the manner of the trade unions. Mr. Petrie believes that "this country can no longer afford to flirt with the luxury of pressure groups." But an example of the way in which a professional body may help its members to maintain or improve their financial status, can be seen in the periodic analysis of members' salaries and responsibilities made by the Institution of Works Managers. The last survey was published in May, 1954, and significantly its title is "The Works Manager and His Responsibilities." For the Institution put first and foremost the responsibilities of their members. Only when these are adequately fulfilled, can the question of adequate remuneration even arise.

Such a professional body cannot use pressure tactics on behalf of its members, who are scattered widely in a vast range of firms of different sizes and types, the members holding very different titles and exercising different responsibilities. But by setting professional standards and conducting qualifying examinations for membership, the Institution can at least ensure that its members are worthy of reasonable professional salaries. Also



D. G. PETRIE

A works manager is in a key
position to set the tone of
thought

by analysing the salaries of members—submitted in confidence—according to size of firm and title of position held, members are given some idea of the range of salary into which they may feel that their own cases fit. Thus they can do their individual bargaining with employers from a position of some knowledge of the market. This is particularly important today when inflation is continually raising the cost of living and salary and wage

### MANAGEMENT

Bulk orders have been received for reprints of the article on "Management Consultants" in the July issue of BUSINESS. It has therefore been decided to make these reprints generally available in quantities of any size at 6d. each, on request to the Editor, BUSINESS, Mercury House, 109-119 Waterloo Road, London, S.E.1.

levels. In fact a salary survey needs to be, and is being conducted by the Institution every few years, so that members can see whether they "are keeping up with inflation."

When BUSINESS asked Mr. Petrie how works managers can expect to fare with their individual bargaining. if trade unionists force the pace with collective bargaining, he made the point that works managers can and should play an important part in helping to damp down the thrusting policy of some militant unionists. As members of a professional body, the works managers must always associate service with reward. In their daily contact with staff and workers they can disseminate the same attitude. A works manager is in a key position to set the tone of thought on wage bargaining, just as he is on other matters that are more directly connected with production.

#### NEWS FOR SHAREHOLDERS

Early Release or Late ?

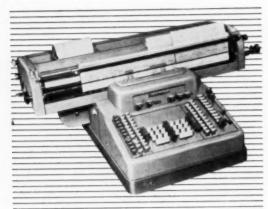
How can a company make sure that they are on the best of terms with their shareholders? Addressing a meeting of the Institute of Public Relations in London recently, Lord Chandos, chairman of Associated Electrical Industries Ltd., revealed the "secret" in one word: Disclosure,

He explained: "During my business life I have studied a great many companies which have got into a mess... and on nearly every occasion it has been lack of disclosure that has brought the trouble."

Sometimes the accountancy or costing system was so faulty that bad factors were disclosed only after they had done their deadly work. But often it was the human desire not to give the shareholders shocks—to gloss over trading difficulties by slightly straining the truth—that not only led to disasters but also delayed remedies which, if applied sooner, might have averted the worst consequences.

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**GRADUATE**entering industry is hired for his potential rather than his actual ability. He generally needs some kind of initial training. But today a wide gulf separates what employer and graduate respectively feel should constitute that training. As a result, many firms find themselves losing their trainees after a comparatively short period of time. Alternatively, the men and women who came down from university with enthusiasm and high hopes become embittered and apathetic. The main reason for this lies in the nature of the training schemes that industry runs for its graduate entrants.

These fall into two categories: apprenticeship (training for recognition by a professional body) and 'managerial' (serving as a general introduction to the work and administrative methods of a firm). But a much more revealing distinction can be made between long and short courses. Let us deal with them in some detail.

#### Long Courses

The long course generally involves the movement of graduates from department to department over a period of between eighteen months and two

The underlying idea here is good. There is an undeniable gap, which must be bridged, between the academic institution and the shop floor or administrative office. Nor do trainees resent being trained. On the other hand they feel most strongly that they should not have to spend more time than is really necessary on relatively elementary jobs, and that any scheme designed for them should take into account their mental equipment. They are eager to learn; but many training schemes act only as a brake on their ability to absorb instruction. What so often happens is this :

1. Bad Programming. Often the time allowed for a trainee to spend in one section or department or on one type of job is far too long. In a fraction of the allotted time he will have met all the people, become familiar with all the machines, and grasped

'Business' Looks at GRADUATE TRAINEES

# WHAT makes them restless WHY they get bored HOW a new approach can help

Most graduate training schemes last for two years-often at the insistence of a professional body. But a BUSINESS enquiry shows that so much time is rarely needed-or well-used. Shorter courses and earlier responsibility have already proved successful, but what is really needed is a radical change in approach. A recent experiment, applying academic methods to the teaching of industrial skills, showed how this may be achieved.

the basic function of that department. For the rest of his time there he is being wasted. No major tasks can be given him since he is only a bird of passage, and the minor ones are neither interesting nor instructive.

#### By STEPHEN ROSE

The administrative trainee usually has even less to do than the apprentice. Where the latter can at least go to a machine and make something if

ent on the people he meets. A good departmental supervisor can make his stay stimulating, but an overworked or uninterested one can make nonsense of it. Firms should therefore be prepared to learn from their own trainees where days, weeks and even months of their course can be pruned away.

2. Bad Preparation. Once the programme has been mapped out, the course organizers in many cases think they have completed their task. he feels bored, the former is depend- They have decided to send a par-



Trainees are eager to learn; but many training schemes act only as a brake on their ability to absorb instruction. . . . Bad programming, bad preparation, bad psychology and bad timing lead to frustration, bitterness and boredom

ticular trainee to a particular depart- invest in two years' additional learnmorning, as happened in a recent case, see the supervisor who has absolutely no time to spare, and find himself fobbed off with a routine job of paperwork which is of no instructions on a wider basis.

What is required is careful preparation of a trainee's route through the firm, ensuring that his arrival at each stage is expected, and that the supervisor with whom he will be dealing has had enough notice to be able to arrange the best way of demonstrating the work that goes on in his department. One firm has now taken the trouble to print a special internal booklet, pin-pointing some of the 'do's' and 'dont's' of dealing with trainees, and aimed at the people in each department on whom the onus of the training will fall. After advising instructors to start with a plan, and steer clear of too much involved detail, the booklet emphasizes with humour: training other people is really important . . perhaps the reward is in heaven. . .

3. Bad Psychology. With National Service behind him, the average graduate today is about 24 years old by the time he enters industry. Except for two years, he has been absorbing formal education ever since he can remember. Quite naturally, he now wants responsibility, activity, a job and a wage that will permit him to start living at rather better than student standard.

The graduate is quite prepared to

ment because it represents an im- ing if that is going to qualify him for portant part of the firm's activities. a good career. But it is surely under-What they very often fail to consider standable that his morale is lowered is exactly what that trainee is going drastically if he finds that the two to do there. He may well arrive one years in question are to be spent watching others work, or performing elementary tasks for which a university training is quite unnecessary.

All this may sound elementary itself, but the fact remains that only tional value, but which keeps him too within the last two years has any busy to see the department's func- attempt been made to adapt industrial training methods to the capacity of an academically trained mind. This point will be dealt with more specifically later on.

> 4. Bad Timing. For apprenticeships and often for management training schemes too, a two-year period seems to have become established as a sort of divine order. Professional bodies and institutions are probably the chief offenders here, as their stipulations leave firms in many fields without much choice. But several companies are gradually coming to the conclusion that two years is an unnecessarily long time to keep a graduate in formal or semiformal training.

In quite a number of cases, even without any specific policy on this point, trainees find themselves gravitating towards the research or development departments for their second year. There they can do real work, and often fill positions vacated by staff members. But this again causes a certain amount of bitterness. For if the graduate is still technically on his apprenticeship scheme, the fact that he is doing a proper job of work need not cause any change either in his status or his pay rates.

But forward-looking firms are now

beginning to place trainees in staff appointments before the full time has elapsed, though without telling the professional body concerned.

Similar things have happened on administrative schemes. Where a trainee has shown himself ready for responsibility before the originally envisaged two years are up, and where a suitable staff position becomes vacant, managerial trainees, too, are being taken off their schemes somewhat early. Invariably this flexibility has been warmly welcomed by the graduates. On the other hand firms that cling to their rather arbitrary time-cycles for training usually experience dissatisfaction and a high turnover rate among trainees.

There follow two case histories which illustrate some of these points.



Graduate 'A' came from one of the smaller university colleges. To obtain official status from his prefessional institution he had to take a two-year apprenticeship. The firm he chose to join was a large engineering company. It had not canvassed for graduates, did not refund interview fares, and had few other graduates on the staff. But the management seemed interested enough to have 'A,' and promised him the stipulated training.

On arrival, he was welcomed by the managing director in person, and told that he was vital for the future of the company. It was hoped he would be happy, etc. Since that day he has never talked with the managing director again. Instead he had to work under a supervisor who was very kind to him, but who failed to understand the speed at which 'A' could absorb knowledge and acquire experience. Consequently, things soon began to drag on the course.

As 'A' went around the various shops and departments, he started a continuous fight against the manage ment, in an effort to try and ge something useful out of his two vears.

He admits that he enjoyed much of

his tour round the works and that he did not mind having to fend for himself. But he did feel resentful that there should have been such lack of organization by senior management, and that no efforts were made to keep him in the picture.

For some months now he has been working in the research and development section, to which he more or less transferred himself. There he is doing a real job of work, learning a lot, and liking it. But he is replacing a member of the staff who left, and this has given further grounds for dissatisfaction. For no suggestion has been forthcoming that his pay should be revised in view of the work he is doing. Officially he is still an apprentice.

All in all, it is extremely unlikely that 'A' will remain with this firm when his time is up. His experience has completely undermined his faith in his employers. He can never again regard them as a worthwhile career proposition. They might, of course, offer him a good job when the course has finished. But it would have to be very good indeed to change his views.



Graduate 'B' is also nearing the end of a two-year apprenticeship with a heavy engineering firm. In actual fact he still has another six months to do before the professional institution will regard him as having finished. But this firm are of the opinion that the professional body is considerably out of date in its apprenticeship policy. On the quiet, they have given 'B' a proper staff appointment without waiting for the official period to expire.

'B' was rather a cynic when he left university. He admits joining this firm because they seemed to offer the best training at the highest salary. The firm were rather reserved about promotion and prospects once the course had been completed, but he on his side was not asked to commit himself to a career with them.

During the training period he was

treated as an intelligent human being. He was regularly asked to comment on his training, and knew in any case that the apprentice supervisor was always prepared to listen to a 'moan,' and, if convinced, to do something about it.

Like 'A,' 'B' was left rather much to his own devices between moves, so that at times the training took on a distinctly chaotic aspect. He might be expected to spend three weeks in a shop where he was not allowed to touch anything, or where there was absolutely nothing for him to do. After exhausting that department's possibilities, getting to know the men and making sure there was nothing left for him to learn there, he made a nuisance of himself with the authorities.

This usually had rather a good effect. The firm made it quite clear that their own interest lay in giving 'B' as good a training as was possible, and that they did not really mind constructive criticism. On the other hand, a trainee who simply couldn't be bothered to work things out for himself, and who expected spoon-feeding at every stage, was considered second-rate material, and would be assessed accordingly by the staff department.

What 'B' really appreciated was that every week a lecture session would be held for all the graduate trainees, at which really senior members of the firm came along and talked about their work and function in the company. By this means, quite apart from the actual instructional value of the talks, graduates got to know senior executives, often holding protracted conversations with them when the formal talk was over, while being reassured, if that were necessary, that the manage-

ment were taking some pains over them, and grooming them for a real career.

#### Short Courses

One or two very large firms in this country have introduced short courses for graduates in the belief that these courses can cope better with the problem. Their object is to provide the trainee with no more than the essential background knowledge he requires for any responsible post in the company. All other training is to be done 'on the job.'

One firm running such a course for non-technical trainees has evolved a three months' framework, consisting basically of lectures by heads of departments and practical work at various selected installations, depots and regional offices. One month is also spent at laboratories, brushing up on elementary science. Graduates are certainly not coddled on these courses, and are expected, when on practical training, to knuckle down and cope with whatever manual jobs require to be done. But they are not at it for very long at any one time, and generally regard such things as pleasant interludes in between more formal instruction.

When the three months are over, graduates are posted to jobs within the organization—real jobs of a junior executive nature, often taking the form of understudying senior men. From then on, the graduate's career is governed by normal promotion procedure. As his status changes, he may be sent on more courses, short or long. Management subjects will gradually be introduced, together with concise instruction on new techniques or processes. As each new job is taken on, specialized training may be necessary. But after

The two-year training period has become accepted almost as a divine order. But some companies are coming to the conclusion that this is an unnecessarily long time, and are placing trainees in staff appointments

before the full period has elapsed



the initial three months, the graduate loses his 'trainee' status most emphatically.

The short course is adult, concise and popular with graduates. But it cannot, obviously, obtain the same results as a two-year programme. Its main virtue is not compressiongraduates even found room for pruning on the three-monthly onebut rather a radical difference in approach. It applies mainly to nontechnical graduates, but, as we shall see, a variant of it can be adapted for technical men, too. It implies acceptance of the view that the intelligent graduate should be able to train himself once he is in an actual job. Two further case histories contrast the short and the long course.



Graduate 'C' was an economist who had obtained a very good degree, and had thought at first of an academic career. But the more active life to be expected from industry together with its better salaries, led him to join a giant company in whose vastnesses, he felt sure, there must be a congenial job for himself.

'C' enjoyed the short course which provided his introduction to industry. Much of it was done in company with other graduates or with older members of the firm who had been selected for promotion. Many of the lectures and discussion groups were of a high standard, and those that were not so good it was possible to criticize afterwards. The practical work he found particularly pleasant, and he enjoyed meeting a large crosssection of the firm's labour force. He did not actually learn much on the course, but he became familiar with the background to the industry in question, and did not feel that he was wasting time.

At the end of the three months, 'C' was posted to a job in the marketing section. He languished there for some little time. He was supposed to be understudying his boss, but after a month he felt that there was little more he could learn without

actually doing the job himself. In any case there was not really enough work for two people. He decided to inform the management of his view. For a little while nothing happened, and 'C' was just about to make a fuss when his boss (who was some 20 years older than 'C') was promoted, and 'C' given his job.

"I was not really ready for it," 'C' admits, "and the firm were rather of the same opinion. But they thought I could probably keep my head above water long enough to survive the first few months. They seem to have been right as I have not yet been sacked, and I certainly appreciated the chance to show my worth. Soon I shall probably grow restless again, as this job is not one to spend the rest of my days in, and then once again I shall probably find myself on something quite different, understudying a senior man with a view to getting a similar job myself.

"Incidentally, I am not an exception here. The firm really believe that extended training is a waste of time, and that, as they have to risk letting us have responsibility sooner or later, they might as well let us have it sooner."



Graduate 'D' joined a similar type of firm, though a smaller one. He was hoping for the same kind of career as graduate 'C,' but was placed on a long course to start with.

'D' was impressed with his firm right from the start, owing to the fact that the managing director himself was present at the interviews, and obviously took a keen interest in the candidates. After the initial introduction, 'D' was kept at head office for a little while, to meet as many executives there as possible, and to get an idea of the company's overall operation.

Then he was sent off on the usual tour of installations, regional depots and offices. As with most of the other graduates, he reports that this stage, which lasted nearly a year, often verged on sheer boredom. But the managing director had said that if anything was wrong 'D' should not hesitate to tell the personnel manager, or if necessary, the managing director himself. 'D' did not hesitate, and spoke his mind on several occasions. In most cases he has found that subsequent trainees had their equivalent parts of the scheme modified, and in some cases cut out altogether.

On the whole things went well for the first year or so. While there was much to criticize, 'D' felt that the management probably knew best what sort of experience he was liable to need in whatever career they were planning for him. (In common with most concerns of this kind, they were careful to let out no hint about where 'D' was going.) When things went too far he would 'moan' in a loud voice, and usually action would be taken.

The end of the first year found 'D' at head office once more. Though officially learning 'administration' he was really only performing minor clerical functions, and getting extremely bored once again. He 'moaned.' At first no notice was taken. 'D' was furious. By this time a seasonal fluctuation had left the department with very little to do, and he was just sitting around wasting time. He took the ultimate step and asked to see the managing director.

He was admitted to the presence within half an hour. He put his case, and it was sympathetically received. Within a matter of days he was taken off the course altogether. Instead, he was attached to a sales district, told to understudy the salesmen, go on the rounds, then deal with a territory himself for three months, and finally understudy and personally assist the area sales manager.

'D' is now doing this and is happy once more. He is nothing grand as yet, but at least he is no longer a 'buckshee' trainee. And his foot is on the first rung of the executive ladder. From now on it is up to him. 'D' welcomes the challenge.

#### What Can be Done?

It seems significant that in all three case histories dealing with long courses, both technical and non-

technical, a distinct restlessness on the part of the trainee set in after about a year. This seems to suggest that the average graduate is prepared to spend his first twelve months in industry learning the new techniques and the new way of life, but that thereafter he feels ready for responsibility and a steady job. Long course supporters would be well advised to investigate their second year's programme, and see whether similar skills and knowledge could not be acquired while the trainee is actually holding selected junior executive jobs.

In quite a number of cases a compromise along these lines is already in effect, though not acknowledged in so many words. One large firm asks its trainees to choose a particular branch of the concern after about a year, and thereafter places them in selected training positions so that the training is both practical, and directed at a specific side of the industry. Furthermore, heads of the departments in which the training jobs are located, are asked to watch carefully the graduates that come along, and to select straight away the ones they want to keep on. This often results in virtually cutting out the final six months' training.

There are other ways in which a trainee can be given a measure of responsibility while still under training, and these play an important part in planning, when a professional institute more or less dictates an arbitrary length for a course. One firm appoints trainees who have studied the operation of one section, and who have worked the various machines, etc., to take over as night shift foremen or as assistant foremen. Alternatively, where a particularly busy

Case histories show that the average graduate is prepared to spend some twelve months acquiring new skills and a new way of life. But after that restlessness sets in as he seeks responsibility, a higher standard of living and a proper job of work

he might be given a trainee as personal assistant for several months at a time. In either case the trainee is given responsibility and a real, if not exalted, job of work to do; he is required to meet and control people and processes in a semi-managerial capacity.

It can be argued that workers may resent having a trainee in charge of a night shift. Nor is the position a particularly pleasant one for the trainee himself, when he knows that his authority hangs by a very slender thread.

One answer to these criticisms, produced by a large manufacturing concern, has been to introduce a medium-length course as a compromise. This is basically a short course, of the type we described above, fused with a very specific technical training. Its aim is to prepare the new entrant to become a junior departmental manager in one of a number of specially created and clearly defined positions. The time taken is only between six and ten months in all, during which time the graduate acquires all the technical and general information he needs to make a success of his first appoint-

He may hold this for as long as two years, depending on how he copes with the work. While he has supervisor is also a good instructor, it, he is very carefully watched, and

assessed. In this way the first job comes as a sort of breathing space for both parties. The graduate stops training and starts working, and the company decides at leisure what sort of a future should be planned for a particular man, and what sort of further training he will require for it.

#### Five Key Points

Quite apart from the various merits or demerits of long, short and medium-length courses, it becomes clear that graduate training schemes should pay special attention to the following five points:

Responsibility: Too many firms fight shy of giving the graduate early responsibility. Some schemes go on after their usefulness has ended only because the management cannot bring itself to unleash the trainee in an executive position.

Labour Relations: It is only the graduate who stands and watches who is resented on the shop floor. When he is put in with a gang and gets his hands dirty, both parties develop friendly feelings. Therefore, when a graduate is sent to a department, there should always be a clear plan of the work he is expected to do

Criticism: Graduates are well qualified to talk about their own training. Management must give them a hearing. It may well be that the criticisms they have to make are misguided, or fail to take into account the wider issues of management. All the more reason, then, to bring out any misconceptions into the open, and have them cleared up by a senior member of the firm. Management Interest: Although there is much to be said for dropping the trainee into the general swim and leaving it to his initiative to do the

It is only the trainee who stands and watches who is resented on the shop floor. When he is put in with a gang and gets his hands dirty, both parties develop friendly feelings. Therefore, when he is sent to a department there should always be a specific job for him to do there



rest, evidence that he has not been forgotten altogether will mean a lot to him. For instance, weekly discussion sessions with senior members of the firm can do much good. Also valuable are irregular recalls to head office for a general check-up on how things are going.

▶ Pay and Incentives: Smaller firms often pay better starting salaries than big ones, but many trainees are attracted towards the latter because of the greater opportunities they appear to present in the long run. On the other hand, the large firm cannot expect too much long-term planning from its recruits. To a graduate who has been skimping for many years as a student, the prospect of well-being thirty years hence does not compensate for discomfort now.

It is vital, therefore, to adopt a promotion and salary review policy which ensures that fair progress is fairly rewarded. The graduate is, generally speaking, particularly ambitious. If he feels he is not being allowed to cross the starting linethat his initiative and intelligence are being stunted-he will look elsewhere for a career. The deserted firm will probably speak with emotion about the lack of loyalty in the younger generation. But the younger generation will have bitter things to say about lack of recognition and outworn promotion procedure.

#### A New Approach

Speaking of graduate apprenticeships three years ago, Professor Hawthorne of the Cambridge University Engineering Department said:

"When a man comes from a university, he is ready to go on with processes requiring mental discipline, in which he will most quickly acquire the professional training he will need in his future jobs... The professional training for engineering graduates

should be a co-operative effort between industry and the educational institution."

In other words, the question was put: has industry anything to learn from academic teaching techniques? Can industrial instruction take an academic form? If so, then many of the faults of current training schemes could well be overcome. Professor Hawthorne was taken up on this point by a subsidiary of English Electric, who said they were prepared to co-operate with Cambridge tutors in order to see whether selected parts of their apprenticeship scheme could be put across by academic techniques. As a result, two trial periods of instruction, both of six weeks' duration, were organized in 1954 and 1955. A report on them, delivered in a paper to the Institution of Mechanical Engineers last April,\* is summarized here.



Training took place at the Acton factory of D. Napier and Son Ltd., which is entirely concerned with development work, and therefore offered excellent facilities for experimental training. Its main workshop is a machine shop consisting of all types of tools, and the experiments were planned around the operation of this shop.

Undergraduates from Cambridge acted as guinea pigs, and teaching methods followed the typical university pattern of lectures, demonstrations, experiments or exercises and the preparation of reports. The practical exercises that were devised

\*An approach to the Techniques of Graduate Training. By D. L. Marples, M.A., J. F. A. Radford and J. L. Reddaway, M.A.

Successful experiments have been made with a new kind of graduate training. Students were given university-type lectures, demonstrations and exercises. They were kept busy, learned practical work quickly, and found out for themselves the relationships between different departments



involved a certain amount of formal instruction, a good deal of independent research work by students in the shops, and the presentation of written solutions or reports by small syndicates, usually of two students. Also mixed in were lectures given by members of the Napier staff about the firm and its activities.

Three distinct fields were covered by the instruction: basic technology, study of the operating unit and office work. The exercises in each case were set so as to give the student's initiative and powers of observation and assessment the widest possible scope.

A typical exercise was this: students were asked to observe closely the reassembly of a turbo blower which had been stripped and repaired and to make detailed notes of the procedure and technique used. They were provided with some additional sketches and explanatory diagrams.

Then they had to produce an 'Instruction Manual' from which a skilled fitter could reassemble the blower without previous knowledge of the unit. They were also asked to number in on an exploded view of the blower the sequence of operations.

Another exercise dealt with production control. Students were given drawings and operation layouts for a number of details on which operations in the machine shop were being performed during the period of the course. They then had to produce a complete account of the production of each detail, including a flow process chart and a description of routing and methods of transportation. They were also asked to give a full account of each machining operation describing things like the range of cutting speeds used, the method of work holding, etc. Finally they had to say whether the operation could more easily have been performed on another machine.

It will be seen that if a whole apprenticeship were to be organized on these lines, the necessary information and practical experience could well be imparted in such a way that the student plays the active role, and

Continued on page 177



Q.V.F. Ltd. wanted to sell chemical glassware to German industry. But against German manufacturers' efficiency and promptness a mere agency would have been powerless. So the firm established their own subsidiary at Wiesbaden in an effort to give unrivalled service. If their venture succeeds they may double their present size in five years

# This German Subsidiary

# Helps Sell British Exports

By GEORGE HAMILTON

in Wiesbaden, Germany, inaugurated a new limited company: QVF Glastechnik GmbH. This is a sales and manufacturing subsidiary of the British firm Q.V.F. Ltd., suppliers of glass pipeline and industrial plant at Stone, Staffordshire. It represents a bold bid by this firm for an export market that could not adequately be attacked in any other

After the recent war, it was found that the British glass industry had progressed rather further than its

N May this year, a board meeting German equivalent in the field of industrial glassware, and consequently British suppliers were able to establish good export markets where previously they had not had much to do. Two specialist firms in this field-James A. Jobling and Quickfit and Quartz-got together in 1953 and formed Q.V.F. Ltd. with the specific object of exploiting the new opportunities abroad.

> The firm prospered, and established agents all over the world. It did not, however, make any attack on

that country's own eminence in the field. All the same it was found that some equipment was being sold to German firms via the Dutch agents.

Then, in May 1955, Q.V.F. exhibited at the Frankfurt Achema, the Mecca of Europe's technical chemical plant buyers. The company adopted a vigorous exhibition policy, took a large stand and went to some trouble to put on a good display. Every exhibit on the stand was a working model, and this attracted much attention, as no German manufacturer had anything similar to show. For their main exhibit, the company had a glass tower, 18 inches in diameter. This is the widest diameter tower made in the world. and it made the company's name at the Achema. It also happened to be the tallest exhibit in the building, and acted as a good eye-catcher.

As a result of all this, the response to the company's effort was excellent. Particular interest was shown by the the German market itself, in view of German market. Therefore, when Q.V.F. were approached by two German technicians from a rival firm, to ask whether they could become Q.V.F.'s German agents, the company decided to investigate the possibilities. The German chemical industry is as big as the English one, if not bigger. To break into such a market would be a glittering prize, and one which could double the amount of business done by the firm.

But was an agency the best way to exploit these possibilities? An agent would be tempted to skim the cream off the existing demand, and might only think of broadening his operations when it was too late. A better solution, it seemed, would be to open a sales subsidiary. By this means an enlightened sales policy could go all out for the long-term profit, and establish a newcomer to the market on a sound basis.

Such a move would, of course, entail a considerable financial outlay. But then an agency, too, would have to be started on extended credit. Furthermore, once the agency had been successfully established, Q.V.F. would only benefit as its suppliers. But with a subsidiary of their own, the firm's investment would bring full return.

#### A Smokescreen

There were other considerations too. For the firm to break in on the German market, it would in any case be advisable to have some kind of service headquarters actually in Germany. By going the whole way, and setting up a subsidiary, they would have a nationalistic smokescreen—Germans not unnaturally tend to buy German wherever possible—and would inspire confidence in the customer, who knows he can telephone

the firm, or jump in his car and go to see them without more ado. An agency, by contrast, is often rather intangible, and the nature of industrial glass installations makes close liaison between manufacturer and consumer particularly desirable.

#### Quick Service

Finally, a subsidiary with a certain manufacturing capacity would be able to cope with minor repairs, replacements and special parts, giving that little extra service that might make all the difference to the reputation of the new company on the Continent. A European service scheme had, in any case, been under consideration for some time, and the establishment of a headquarters in Germany meant that Continental customers would now have road and rail acess to quick service facilities.

For all these reasons, the decision was taken to establish a German subsidiary. The first practical step was to consult a German lawyer, as Germany has rather complicated regulations for foreign businesses. This is what the company learned:

- 1. The establishment of any new company in Germany requires the consent of the local state or *Länder* authorities. These can veto a new business if they think it is not advantageous to their area (or if there are already too many similar firms registered).
- 2. Having found a compliant authority, application has to be made to the Federal Minister for Economic Affairs for permission to set up a company whose controlling board resides outside the country. Special regulations govern the establishment of a public company, but for a

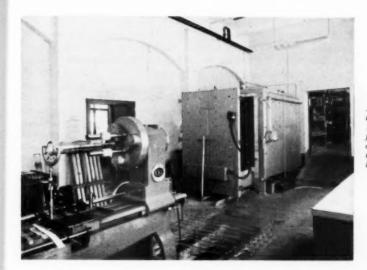
private limited company (Gesellscha) mit beschränkter Haftung or GmbH) permission is only granted for the setting up of an autonomous business. Its day-to-day running must be in the hands of a manager fully subject to German law and taxes. The only type of intervention from the parent company that is envisaged under the word autonomous is the hiring and firing of that manager.

- 3. Foreign investors wishing to establish a business in Germany are strongly advised to acquire a "liberalized capital account." These accounts are balances held by foreign creditors at West German banks in *Deutsche Mark*, and which have been restricted to use within Germany. Transactions made through such an account are freed from many tiresome and restrictive formalities which would otherwise be encountered.
- 4. A special foreign exchange license will nevertheless be required so that the profits, or an agreed percentage of the profits from the new concern may be taken out of Germany. This license is only a formality and will always be granted. Its purpose is to see that such transfers of money as are allowed really do represent gains on invested capital.
- 5. Liquidation of the companyshould that be required at a later stage, can only be effected if the proceeds are paid back into a liberalized capital account. Thus, the chances of eventually retrieving one's capital would depend on being able to find another foreign concern prepared to take over the German balance and pay the account holder for it in a transferable non-German currency.

Finally, the whole proposition would depend primarily on an adequate import license being made available, but no difficulty was to be anticipated here. Also, of course, British Board of Trade and Bank of England approval were required, but were also readily forthcoming.

There followed the question of how profitable the subsidiary was likely to be. What were the regulations governing company and product

It was considered vital to have a German national in charge of the subsidiary.... People prefer to do business with their own countrymen, and no foreigner can be sure of hitting the right sales note first time in a foreign market



A corner of the German subsidiary's manufacturing and service installation. Most of the products are imported from England, but it was vital to have on-the-spot facilities for quick repairs and the manufacture of last-minute small parts

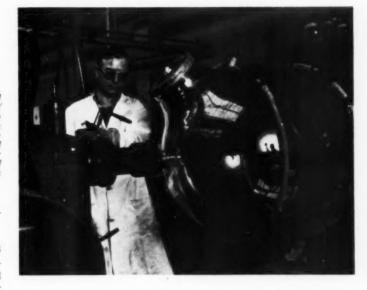
A giant flask being manufactured at the Stone, Staffordshire works of Q.V.F. Ltd. The skilled workmanship and advanced design of these British products enable them to compete effectively in Germany, though faced with a considerable price barrier in the form of customs duty and sales taxes

taxation? The German lawyer summarized the situation as follows:

CORPORATION Tax is payable at 45 per cent of the net profit by all businesses. But for a private limited company this is reduced to 30 per cent if distributed profits do not exceed eight per cent of the value of the company as assessed for "capital" tax (see below).

CAPITAL TAX is assessed on the total resources of a company (property, capital, plant, investments, etc.). It is charged at one per cent of the determined value, but for a private limited company there is an initial tax-free allowance of 20,000 DM (equalling roughly £1,700).

TRADING TAX is levied on all profit-making concerns. It is asses-



sed by the local Land authority on sidiary and taking a responsible part per cent.

TURNOVER TAX is an indirect levy, dence of the director. payable at four per cent on all orders of his business.

directors receiving fees from the sub- advantage of being on the Rhine,

the basis of either the net profit or in its management are technically the total payroll. The rate at which liable to German as well as British it is charged varies from year to year, taxation on those fees. But the rather like our own rates, but unlike "Double Taxation" agreement with them is generally in the region of five Britain ensures that in practice this does not happen, and that fees are taxable only in the country of resi-

Q.V.F. were not discouraged by delivered or services rendered, against these facts, and had soon found both payment by a businessman as a part a local authority prepared to welcome them and suitable premises. These As regards private taxation, any were at Wiesbaden and had the with water connections to Rotterdam. They also had excellent road and rail access and were within easy reac't of Frankfurt airport. Thus, goods could be received and dispatched by every possible means of transport, while executives of the company had air travel facilities.

The company were also fortunate in having available, to run the firm, the two German specialists who had originally approached them. It was considered absolutely vital to have a German national in charge, not only because company law obviously preferred it to be so, but also because it was sound business sense. People always prefer to do business with their own countrymen, and no foreigner can be sure of hitting the right sales note first time in a strange market.

#### Communications

The only real problem about this subsidiary was the question of communications. Every day orders have to be transmitted, including detailed specifications, design amendments, etc., while technical consultations have to be held, advice given and opinions exchanged.

One solution is, of course, to install *Telex*, and this is being done. But what is still urgently needed is a means of reproducing technical drawings over a long distance. Q.V.F. for one would be delighted if a Post Office version of existing land-line transmission systems of this sort could be devised.

Until that happens, the directors of the new concern must be prepared to stand by at all times to go to Germany in person at only 24 hours' notice. In actual fact they are already doing this so frequently that their wives call themselves "glass widows." But the company see no alternative if the best standard of service is to be preserved.

As mentioned earlier, the subsidiary company came into formal being in May of this year. By that time the premises in Wiesbaden had been stocked with standard components from England, a German catalogue had been produced, import licenses

and other formalities were completed and all was ready for business to commence. Even the orders were forthcoming. Then it was found that the new firm's greatest obstacle was to be its own parent.

#### Different Tempo

The British company's normal delivery time is in the region of four weeks. For this country that is extremely good, and compares very favourably with many competitors. For Germany it is out of the question. Customers there are used to quite a different tempo.

If, for instance, a German firm were asked to design chemical plant of a special kind, they would not wait until their own staff were free to undertake this work, but would engage temporary draughtsmen, put them on night shift and overtime if necessary, and have the drawings ready within 48 hours. Of course, many firms in this country would be only too happy to engage temporary draughtsmen, if only they knew where to find them. Nevertheless, German efficiency and promptness represent a very real threat to any British competition.

#### Price Handicap

The new subsidiary is thus starting under a considerable handicap. Furthermore, by the time higher original costs and transport costs have been augumented by five per cent customs duty and five per cent sales tax, the British product is selling at almost double the German equivalent. Can these disadvantages be overcome?

"It sounds impossible, I know," says Brian H. Turpin, the firm's managing director, "but we are confident we can do it. The Germans may be unbeatable at sheer efficiency in fulfilling orders, but we are going to provide better service. Most of the senior members of this firm, both British and German, are personally known to our customers. If there is any query or difficulty, they know we are prepared to be on their doorstep within 24 hours. And the Germans are very impressed if they

do business with the managing diretor or export manager in person."

Sales director J. G. Window add : "There is also the question of sheer 'know-how.' We believe we can keep the undoubted lead we have on the Germans in design and manufacturing skills. At the moment we are doing things which people in America and Germany told us are impossible. We are introducing glass into processes where it has never before been used. Our prices are necessarily higher than those of the Germans. But if we can market our craftsmanship efficiently, and back it with real service, then the large chemical firms who provide the major part of our market will not quibble about price. They want the best; it is up to us to prove that we have it.'

#### **Business Manners**

Mr. Turpin makes the additional point that any firm that is thinking of breaking in on the German market, would be well advised to brush up its business manners.

Since the war, he feels, our approach to correspondence and queries has worsened to a marked degree. Today's post is not always answered today, for instance. "For Germany," says Mr. Turpin, "that just will not do. Over there we are selling in a highly competitive market. We have to use every means in our power, and can't afford to ignore good business etiquette."

Some £20,000 are at stake for Q.V.F. in their venture. This sum is important enough to make it vital that they succeed in Germany. In terms of sales, success means that they must increase sales in that market by ten times what they sold in May of this year. That cannot be achieved in a single year, and a relatively modest target has been set for 1956-57.

But everyone concerned in this strange enterprise is convinced that the subsidiary will more than justify itself. If they are right it will once again have been demonstrated that no market, however unlikely, is completely "closed."

# You Can Train Yourself in Public Speaking

By R. S. LAWRENCE, L.R.A.M., A.D.B.

Here are some helpful points from a teacher who believes that there is no excuse for anyone saving: 'This kind of thing is not in my line'

(a) The speaker is caught unprepared EDITOR' page, and read carefully and is unable to 'ad lib.' (b) The through these in the train or bus on speaker has prepared a half-hour his way to work. These letters will speech for a ten-minute occasion and reflect a cross-section of public has bored his audience and (c) The opinion, some serious, some flippant, speaker has killed good material by a delivery more fitted to the fat-stock prices.

The after-dinner speaker has a special relationship with his audience. They are partners in a social occasion, and good manners dictate their tolerance of him. But likewise he is bound to repay their forebearance with entertainment worthy to follow good food. The after-dinner speech should be an oral liqueur to be enjoyed, not suffered. The best advice I have heard on this came from George Jessel, the famous American toastmaster and wit. 'If you don't strike oil in five minutes," he said, 'stop horing!'

It is possible to train for public speaking without an instructor, and this article points to some of the methods.

Take the question of 'ad libbing.' Suppose that Mr. Jones is uncertain of his ability to speak extemporaneously and wishes to do something about it. Let him go straight to the so he composes a reply. He launches carry examples of 'terse verse' and

Y experience of after-dinner nearest newsagent and buy three or speaking has led me to list the four popular illustrated magazines failures under three headings: which carry a 'LETTERS TO THE



A nervous wreck fidgets like a hen on hot bricks

some merely childish.

Now let Mr. Jones choose one of these letters and plan, in his head, a short speech on its subject. Perhaps the letter has been from a woman who finds her husband's domestic incompetence intolerable and says so.

Is Mr. Jones going to let this pass? Never. He may be a mouse at a public dinner but here, in the seclusion of his imagination, he is a lion,

a pretty telling barb and is pleased with himself; he remembers an amusing story he heard at the Club, and so on. He is, in fact, practising the kind of imaginative thought which distinguishes the wittiest speakers.

2 A dreadful affliction at any dinner is the self-elected 'King Comic.' A good boxer would not dream of signalling his punches, but this fellow has no such inhibition about his jokes. 'Listen to this,' he says, 'this will kill you.' The long-suffering audience can do no more than hope that it will kill him instead.

Humour should be unexpected. and should arise naturally out of the subject-matter. Think how often we say of our favourite comedian: 'He's so naturally funny; a born comedian. The fact is, of course, that he is nothing of the kind. Those jokes which appear so natural, so spontaneous, have been rehearsed and rehearsed and rehearsed, and it is his technique and brilliant timing which make them appear spontaneous. It is better to spend an hour rehearsing a fiveminute speech than 'wiffle away' for an hour on ten minutes' half-hearted thought.

3 Another useful practice is to col-lect witty sayings, as schoolboys collect stamps. Many magazines witty sayings which can be quoted or adapted with advantage. There is nothing shameful about this; what was good enough for Shakespeare should satisfy you and me.

Much of the best wit has an edge of malice and so long as this is not used personally it can be used with great effect. Dorothy Thompson once slated a Broadway musical at some length, and she ended her critique by saying: 'I find I have knocked pretty well everything in this show except the chorus girls' knees, and there, unfortunately, God forestalled me!'

Amusing definitions are another good thing to collect, and a little practise will soon enable one to invent original definitions. I like particularly:

An expert: A man who can take something you already know and make it sound confusing.

An ideal husband: One who has learned to co-operate with the inevitable.

Diplomacy: The art of saying 'nice doggie' until one has time to pick up a stick.

The most common pitfall for speakers is that of embarassing one's hearers by communicating to them one's own lack of confidence. Audiences hear as individuals, but react as a mass; they are made uneasy when faced with a clearly terrified speaker, and they resent the fact. It is, therefore, immensely important to appear confident whether you are or not.

IN THE SECLUSION OF HIS



Hence the value of practising imaginary speeches.

'Oh, that's all very well,' you may say, 'but a chap can't look at ease if he isn't.' But he can. Any actor will vouch for that. It is largely a matter of stance. A nervous wreck fidgets like a hen on hot bricks; he picks things up and puts them down, he puts his hands in his pockets, takes them out again, stands on one foot and then on the other, and advertises his condition to the world at large. Conquer this first. Stand still, relaxed and poised. Practise in front of a mirror, using a few opening sentences to get atmosphere. When you have learned to stand well you are half way home.

5 Another potent enemy of the public speaker is the temptation to take the line of least vocal resistance and drone through his speech in a dull monotone, never varying pitch of voice or pace of delivery. This is the oral equivalent of pheno-barbitone and this kind of speaker might

just as well pass the tablets round and be done with it.

Think your voice in curves; and pause now and then to allow your listeners time to absorb what you have just said. Nervous speakers often fear to pause in case the audience think they have 'dried up;' but if your expression is calm and confident during the momentary pause, no one will dream of such a thing. A couple of seconds 'silent beat' is a wonderful memory refresher, enabling you to marshal an astonishing number of facts before proceeding with your speech.

The speaker who begins by saying: 'Now this kind of thing is not in my line,' is talking nonsense. Speech is man's most common activity and in one way or another we are practising public speech all day long. Take a positive view of the after-dinner speech; don't panic about what you can't do; think of what you want to say and say it briefly and pleasantly. It is much easier than most of us think. It is the mental attitude which is the potential barrier.

The following summary may help to drive home the main points of this article:

- 1-Prepare thoroughly.
- 2-Stand still and relaxed.
- 3—Speak musically, in curves of sound.
- 4—Don't begin by apologizing for deficiencies you have not yet displayed.
- 5—Look confident even if you feel like death.

DON'T DRONE THROUGH YOUR SPEECH



Think your voice in curves

'LISTEN TO THIS,' HE SAYS, 'IT WILL KILL YOU



And they hope it will kill him

# Ceramic Tools Will Cut Metals

### FASTER · BETTER · CHEAPER

Claims that ceramic cutting materials are going to revolutionize machine-shop operations are now being borne out by experience in the U.S.A. and some European countries. Soon British firms will have a chance to find out for themselves what these new tools are capable of doing. This article tells them what to expect. It shows, too, how ceramic tools may help to accelerate the development of automatic production methods

UT hard steel and other metals with materials which belong to the same family as the porcelain ashtray on your desk? Cut them, moreover, at speeds which would be regarded as phenomenal if conventional tools were used? The idea may seem absurd—but it is quickly becoming a practical proposition.

For some time engineers have been intrigued by reports that the development of ceramic cutting tools would eventually bring about a minor (and perhaps a major) revolution in the metal-working industries. Now, after much speculation and many conflicting statements, there is pretty conclusive evidence that the first stage of a revolution has actually begun.

Ceramic cutting tools are already being used commercially (although in penny numbers) by a few American and Continental firms. British firms will almost certainly get an opportunity to test their capabilities within the next six months. And if one ignores the possibility of unexpected

#### By PETER SPOONER

snags—or of over-caution by potential users—there is some indication that the "absurd idea" will soon be having far-reaching effects on the operations of ordinary machine shops.

What are the advantages of ceramic tools? How do they compare the new hard-to-work metals like

with sintered carbides, which are the "fastest" and most hard - wearing tools in common use at present? A lot of things will have to be learned inside and outside the research laboratories before such questions can be answered unequivocally. here is an amalgam of the claims which have been made by several manufacturers of ceramic cutting materials, and are supported, to some extent, by the results of tests carried out under conditions approaching those which the tools will encounter when they find their way into your workshops:

FASTER. Ceramic tools are capable of withstanding higher cutting speeds than either steel or carbide tools. How much higher is still a debatable point. More than one manufacturer suggests that ten times is a reasonable figure.

LESS WEAR. Ceramics last longer than conventional tools. One type is said to "outlive" carbide tools by as much as 2,500 per cent. For others it is claimed more modestly that they get through about four times as much work before the cutting edge begins to break down.

MORE VERSATILE. Using only one grade of ceramic material it is possible to make everything from deep roughing cuts to exceptionally fine finishing cuts. (This will mean a substantial reduction in tool stocks—and less chance of mix-ups in the machine shop.)

CUT ANYTHING. Ceramics cut virtually all industrial metals from soft alloys to hardened steels. Even the new hard-to-work metals like



titanium and vanadium can be machined satisfactorily.

BETTER FINISH. Because there is less tendency for metal to build up on the cutting edge, the finish of the machined surface is invariably better than that produced by conventional tools. In some cases, a mirror-like finish can be obtained with the same tool that makes the first rough cut.

COOLER. Ceramics neither react readily with metals (less friction on that account) nor hold the heat which is generated while cutting. So they can be used at top speeds without a coolant, except where it is necessary to protect the workpiece itself from heat-distortion.

CHEAPER. Cut for cut, job for job—and, in some cases, tool for tool—ceramics cost less than sintered carbide tools. The fact that some makes are initially more expensive than carbides is probably caused by the cost of the special manufacturing processes, which is inevitably high when only small quantities are turned out. The position should improve later, for the mineral substances of which ceramic tools are composed are both abundant and relatively cheap.

Disadvantages? Of course, say the sceptics, ceramics are "as brittle as glass": if the machine vibrates at all or there are any uneven spots in the workpiece—ping! Brittleness is certainly a characteristic of ceramic materials, but the limitations which it imposes on their use as cutting tools are by no means as great as one might

expect. Much depends, obviously, on the way in which the cutting tip is supported and presented to the workpiece. Most of the manufacturers seem to have developed toolholding devices which enable ceramic tips to withstand intermittent cutting shocks almost as easily as they make continuous cuts.

Some reports have stated that ceramic cutting tools can be used only at ultra-fast cutting speeds, implying that the "revolution" will hang fire until the average metal-working shop is able to install machines of much greater power than those which are commonly used today. The other side of the medal is revealed by one or two manufacturers who declare emphatically that their ceramics can be used efficiently on "almost any old lathe."

#### Higher Speeds Coming?

In any event this argument can be turned inside out by saying that the perfection of ceramic cutting materials will allow production engineers to exploit fully the capacities of the latest high - power high - speed machine tools. Eventually, it may lead to the development of machines with much higher spindle speeds than anything which is seriously envisaged at present.

Difficulties will obviously arise if human operators are expected to control such equipment on other than straightforward turning or facing operations. So it is reasonable to

assume that ceramic tools will play an important part in the development of automatic production lines, epecially if the more sensational claims regarding their working life are borne out under factory conditions. The heavy cost of down-time is a vital factor in the economics of automatic set-ups. By reducing the frequency with which tools are changed-or at least by increasing the amount of work which is done between tool changes-ceramic tools should solve some of the problems which exist at present. In time, they may help to raise output per operator or per unit of floorspace to levels which could not be obtained with conventional cutting materials.

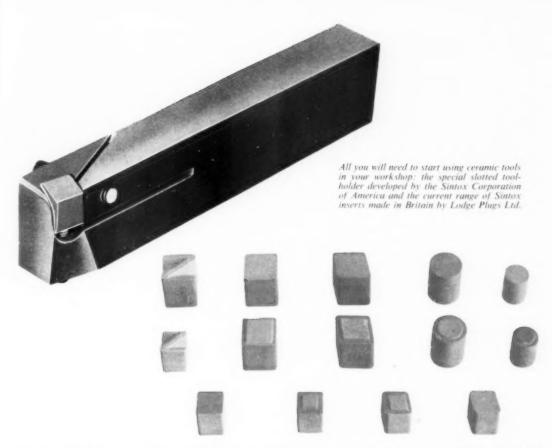
Are ceramic tools really new? The answer is yes and no. In Britain, some development work was undertaken as long ago as 1938. But the results suggested that the usefulness of ceramic cutting materials would be limited to the machining of plastics and non-ferrous metals, and for a time it seemed that the idea had been dropped.

American manufacturers came into the picture at the end of the 1939-45 war. Meanwhile, firms in Czechoslovakia, Germany and other European countries were apparently working on the same lines. In 1952, the Russian technical journal Stanki Instrum. published articles on "The Cutting of Metals with Sintered Alumina Tools" (alumina, or aluminium oxide, is the main ingredient of most ceramic cutting materials) which seem to have anticipated in many respects the reports issued subsequently by firms in the Western hemisphere.

But only recently has there been firm evidence that ceramic tools have "arrived." Headlines were made when several firms exhibited them at last year's American Machine Tool Show. Then came the 1956 American Tool Engineers' Exhibition in Chicago—and more sensational reports. Five varieties were shown there, three of them for the first time.

At least seven American firms are actively developing ceramic cutting materials. They include the Carborundum Company (Stupalox) and

One or two manufacturers declare emphatically that their ceramics can be used efficiently on "any old lathe." But the perfection of these new cutting materials will also allow engineers to exploit fully the capacities of the latest high-power, high-speed machine tools



General Electric (Carboloy Division). able success, are reluctant, neverthe-Some of their products have already been sold commercially, although it is almost certain that the initial consignments are being used for experimental purposes in the purchasers' own workshops. Soon, however, it should be possible to get some indication of the way in which they stand up to regular production work.

#### Important Contribution

In Britain there has been less activity-and fewer headlines. Only one British manufacturer demonstrated a ceramic cutting material at the recent International Machine Tool Show in London; and even they have intimated that it is not their intention to place this material on the market until further extensive tests have been made. Another firm, which, it is understood, have been making it for nearly 20 years. Its working in this field with consider-

less, to say anything more definite than "the results of our experiments are promising." Yet Britain's contribution to the development of ceramic cutting materials is by no means as small as these facts might imply.

Anglo-American Success. Much of the excitement at the American Tool Engineer's Exhibition was caused by a British ceramic called Sintox. Its sponsors, the newly-formed Sintox Corporation of America, gave a series of demonstrations which seem to have upset many accepted theories. Using small pieces of this smooth, pink material in special tool-holders, they did things which some experts had said would never be done with ceramics.

Sintox is made at Rugby, Staffs., by Lodge Plugs Ltd. Rather surprisingly, this company have been use as a cutting material has been

under development since about 1950.

Soon after the Chicago exhibition closed, Lodge Plugs announced that they had received from their American associates an order for two million Sintox tips. This was subsequently increased to five million tips-worth about 500,000 dollars. Lodge Plugs hope that the material will be made available on the home market later this year, but admit that there are some difficulties. One may safely assume that they will overcome these difficulties by entering into an agreement with a British machine tool company.

#### Exceptional Hardness

Sintox was originally developed as an insulating material for sparking plugs. But the manufacturers soon realized that its exceptional hardness -approaching that of diamondscould be used effectively in other fields. A promising application was

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found in the textile industry, where the introduction of synthetic yarns (which are abrasive) was playing havoc with the porcelain thread guides traditionally used for cotton and silks. Steel and tungsten carbide guides were used in some plants, but for various reasons they were not entirely suitable. Sintox did the trick.

Soon the new material was being used in the production of other articles (including high-temperature electronic components, seal faces, argon-arc welding shields and conveyer chain links) where it was essential to provide exceptional high resistance to heat, electric loads, corrosion or abrasion. Then came the development of the cutting tools.

#### New Prospects

Early experiments in this field were not particularly encouraging: it seemed unlikely that Sintox could be made to cut steel and other hard metals. Now these limitations have been overcome and new prospects are opening up. This is partly because the composition of the material has been changed slightly, improving its mechanical properties, and partly because more information is available concerning methods of using it.

Like most ceramic cutting materials, Sintox is composed mainly of pure aluminium oxide: the proportion is actually 95 per cent. To this is added a small quantity of silica, and much smaller quantities of certain refractory oxides.

In one respect, however, Sintox differs from other ceramic cutting materials. This is the way in which the ingredients are "put together." No cement or binding medium is used; the ingredients are sintered at very high temperatures, which forms them into a homogenous structure by a process described as "intermolecular fusion."

The special manufacturing process

has an important bearing on the material's suitability as a cutting medium. Although Sintox is brittle (you can easily shatter it with a hammer) it does not qualify for the "brittle as glass" description which is generally applied to ceramics.

This fact is emphasized at the American corporation's demonstration centre. To squash the accepted belief that ceramic tools can be used only on heavy-duty, vibration-free machines, the corporation have deliberately refrained from bolting their standard lathes to the workshop floor. At the Chicago show, moreover, they put Sintox through even stiffer tests by setting some of the workpieces off-centre and by turning hexagonal bars on an ordinary small lathe. The tips survived these tests with flying colours.

Lodge Plugs and their American associates emphatically refute any suggestion that the use of these ceramic tools will be restricted to high-power machines capable of much faster cutting speeds than are generally available today. For tests have proved that Sintox will successfully cut hard steel bars at a speed of 200 surface feet per minute or lower—even on conventional lathes with worn bearings.



Cautiously, the manufacturers refrain from saying too much about maximum cutting speeds and working life. At this stage of the development programme, they consider that it is impossible to give figures which they are sure would be validated under workshop conditions. But the results of fairly exhaustive tests indicate that Sintox tools are capable of machining hardened steel bars at speeds of at least 2,000 surface feet per minute; and that in certain applications they withstand feeds of as much as 0.05in. per minute. Moreover, it predicted with some confidence that the effective cutting life of the tips will be several times greater than that of carbide tools.

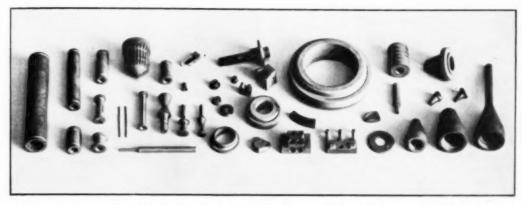
Sintox is a non-porous material with a fine (almost glazed) surface. Only one grade is available; but this, it is said, is suitable for machining virtually all metals in general use today—including titanium, which is inclined to "goo" and "stick" when carbide cutting tools are used.

#### Tip Remains Cool

Its compression strength is high: 240,000lb. (or more than 100 tons) per square inch. What this means in non-technical language is that a short length of Sintox tube about ½in. in diameter can be driven by a machine press through a piece of ½in.-thick mild steel plate—without splintering or chipping.

The material's low thermal conductivity helps to prevent any danger of over-heating when the tools are in use. So does the inert nature of ceramics (which means, in effect, that there is no tendency for the tip and the metal which it is cutting to weld together). Even after making a heavy cut for a long period, a Sintox tip is cool enough to touch almost as soon as it is removed from the work-piece.

Cost? Here, too, the manufacturers are anxious to explode the myth that ceramic tools will have to be earmarked for special-purpose jobs. For the American sales programme is being built around the fact that Sintox tips are cheap enough to be regarded as "throwaways."



As a metal-cutting medium, Sintox is new—but in other fields it has been established for some time. Here is a range of moulded products used in the engineering, electrical and textile industries. Such applications exploit the material's exceptional resistance to heat, electrical loads, abrasion and corrosion

At present, the tools are available only in the form of moulded inserts. These are clamped mechanically in slotted tool-holders, which present the tip to the work with a negative cutting rake.

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11

The special holders have been developed by the American corporation, who also manufacture them. The inserts are made exclusively in Britain by Lodge Plugs. They are supplied in three standard shapes:

- 1—Round, recommended for heavyduty turning and facing operations.
- 2—Square, recommended for gengeral-duty turning and facing.
- 3—Diamond, recommended for turning and facing square to a shoulder.

Each shape is available in two styles: plain, or with moulded-in chip-breaker. In addition, the diamond shape can be supplied with a chip-control groove.

Current prices in the United States range from 65 cents to one dollar 25 cents (about 4s. 6d. to 9s.) apiece, according to the size and type. The special holders are more expensive (from 7½ dollars to 15½ dollars) but they, of course, last indefinitely. No other parts are required.

An important economy factor is that all edges of the insert are used before it is thrown away. The square type provides eight cutting edges. The round type can be rotated periodically to present a new cutting edge to the workpiece.

The American corporation say that, taking all things into consideration, the actual cost of Sintox tools is no more than one-third of the cost of sintered carbide tools. At current prices, they maintain, it is cheaper to discard an insert after all its edges have been used than to attempt to regrind it.

But fixed-tip Sintox tools are also under development. In this case, ceramic insert is hard-soldered to a steel shank. For grinding, the manufacturers recommend the use of a diamond wheel, although they say than an ordinary "green grit" silicon carbide wheel can be used at a pinch.

Although at present the cutting applications of Sintox are being handled entirely by the American corporation, arrangements are now being made with machine tool firms in other countries, notably France. New developments? On the way,

say the American corporation, are Sintox milling cutters, boring tools, drills and super-finishing tools.

Ceramics on Show. Ceramic-tipped tools were demonstrated at the International Machine Tool Exhibition, Olympia, London, by Wickman Ltd., of Coventry. As in the applications described above, they consisted of ceramic inserts — of rectangular shape—clamped in metal holders.

Experimental work with these tools has shown "great promise." But Wickman do not propose to make them generally available until further extensive tests have been carried out.

At the Machine Tool Exhibition, the tools were used for turning a metal component on a Dubied lathe. Cutting speed was between 1,800 and 2,000 feet per minute. Although Wickman hold the view that the main field of application will be relatively light cutting at high speeds, tests have already shown that the tools are capable of making fairly heavy cuts and of withstanding intermittent cutting shocks.

In one test—on EN24 alloy steel, heat-treated to a tensile strength of 50 to 60 tons—the cutting speed was 1,500 feet per minute, the depth of cut 0.080in., and feed rate 0.012in. per revolution. This resulted in a very high degree of surface finish. After 30 minutes of cutting, moreover, the wear on the tool was only 0.006in.

The ceramic material is basically

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sintered alumina. Its holder is designed to apply a slight negative cutting rake, the tip being located on a tungsten carbide anvil which ensures an accurately flat, rigid seating. This anvil also protects the toolholder from wear induced through the erosive action of fast-flowing swarf impinging on the tool immediately beneath the tip. Above the tip is a tungsten carbide chip-breaker plate. The complete assembly (anvil, tip and plate) is rigidly secured by a

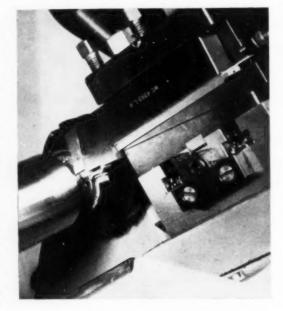
As the cutting life of each edge is exhausted, the tip is re-positioned. All eight edges of the rectangular insert are used before it is discarded.

Looking Ahead. This article has described only a few of the developments which are now beginning to throw off the "experimental" label. In any case, the picture is still incomplete, and it will be some time before the missing pieces are finally slipped into place. Current assessments of the value of ceramic tools may have to be adjusted-up or down-when hard facts become available concerning their performance under ordinary workshop conditions!

Cynics may take the view that this is another of those technological revolutions which drag on for about 20 years before anyone realizes that a "revolution" has in fact taken place. As evidence, they may put forward the fact that carbide tools-for which equally sensational claims were made when they were introduced in the late 'twenties-did not come into common use until the 1939-45 war presented engineering firms with new metal-working problems.

There is, of course, a possibility that ceramics will be treated as special-purpose tools, only to be used on jobs which defeat conventional cutting materials. On the other hand, there are at least two reasons for believing that things will move ticable today. Any cutting material which these tools have shown in the the heavy punishment imposed by That lesson may be remembered.

Still experimental—but the results have shown "great promise." The ceramic insert used in this Wickman Econotip tool-holder is located on a tungsten carbide anvil, and the assembly includes a chiphreaker plate. A cutting speed of between 1,800 and 2,000 feet per minute was obtained when turning a steel billet on a Dubied lathe



test-room is fulfilled in the workshop.

The first is that the rapid development of automatic control systems and fully automatic production lines is making engineers prepare for the time when machining speeds will be much faster than is generally pracmore quickly if and when the promise which is capable of standing up to serious headaches in many quarters

such speeds should be assured of a bright future!

The other reason - on a much broader plane-is that ceramics are composed entirely of non-strategic materials. During the last war, the difficulty of maintaining adequate supplies of tungsten carbide caused



## **Export Packing Losses**

S is well known by those who have travelled abroad, or visited port areas, the results of bad packing are littered about on every dock and quay throughout the world. I am fully aware that handling conditions and methods are the chief cause of damage, but until they improve we must do our best to overcome the hazards by planning our packing. When an overseas customer receives damaged goods in a battered case of poor quality, it is only natural for him to ask himself what can be the manufacturer's opinion of his products.

While many companies introduce time-study engineers specifically to save labour, a packaging man can often save far more by rational packaging. In export packing today there are two main weaknesses which, between them, cause the majority of losses. They are (a) bad packing and (b) bad marking. Each is considered here in some detail.

Bad Packing. In addition to a thorough knowledge of the product

By E. G. O. RIDGWELL, B.A., M.Inst.Pkg.

Manager, Transport and Packaging Department, The General Electric Co. Ltd.

Here are some pointers to improved packing, illustrated with photographs presented to a conference of the International Cargo Handling Co-ordination Association

itself, your packaging executive must find answers to the following:

- What are the port and shipping facilities he will have to use and how will his product be loaded, stowed and discharged?
- 2. How far away is the final destination from the port of discharge and what transport is likely to be used?
- 3. What are the climatic conditions likely to be: (a) on the journey (b) in the country of destination?
- 4. Is the product likely to be stored for any length of time overseas, and under what conditions?

- 5. Is there serious congestion at the port of discharge which might mean that packing cases will stand exposed to the elements (e.g. monsoon conditions) for some time?
- 6. Will the product be seriously affected if the case is opened for customs examination and not properly refastened: If so, are there any steps which can be taken to mitigate this?

Special circumstances may of course, also lead to other factors being considered.

Bad Marking. Although at first sight it may seem an unimportant point, bad or inadequate marking causes great difficulties for the port services, frequently delays the passage of goods through the customs, and often results in misdelivery or total loss.

Defects in marking export cargo

Company slogans and details of contents should be avoided. Apart from causing confusion, they encourage pilfering.

may be classified under several headings.

- (a) Unintelligible or illegible marks.
- (b) Insufficient marking.
- (c) Incomplete obliteration of old marks, when secondhand cases or crates are used.
- (d) Badly placed marks.
- (e) Information about the contents, which is extraneous to the identification marks, and yet is mixed up with them.

Marks must be made with indelible ink capable of withstanding friction and moisture. Moreover, the marks stencilled on the case should agree in every detail with those on the shipping documents. Briefly the essential information is as follows:

- Mark (i.e. the designated mark of the customer).
- 2. Number of package.
- 3. Port of discharge and country.
- 4. Place of destination.
- Dimensions and weight and any necessary indication of contents (i.e. fragile, explosive, acid, etc.)

The obliteration of old marks must be carried out thoroughly. This, of course, refers to the re-use of second-hand containers. In my opinion the practice is not to be recommended, but there are occasions, for instance in the use of steel drums with detachable liners, when re-use is essential for economic reasons. In such cases, the old mark



Little care has been taken to obliterate old marks, with the result that it is almost impossible to determine which are in current use

must be obliterated completely so that no confusion is caused.

Badly placed marks can cause real difficulty in discharging goods and in locating particular packages for customs purposes. When you come to mark your export packages, try to imagine how they will be stowed on board ship. If they are likely to be

placed on top of each other, leave the top and bottom blank and mark on the sides. Metal drums, on the other hand, are normally stowed lying down and the marks should therefore appear on the lid and on the bottom. Normally, bundles of tubing should be marked on the ends and in the middle.

Finally, there is the problem of extraneous markings, such as company slogans, details of contents-phrases like "More. . . . Refrigerators for Better Homes." In general these are to be avoided. For certain overseas destinations, like India, it is essential to mark the country of origin, but it is normally unwise to go beyond the markings I have mentioned. Evidence shows that, apart from arousing confusion in the minds of the handlers overseas, indications of the contents frequently lead to pilfering. In fact, the shipping and insurance interests in the United Kingdom are campaigning actively at the present time for cases to be shipped abroad absolutely devoid of any indication of their contents.



In spite of all the unnecessary marking on this case, there is no indication of the port of discharge

# How 'Democratic Management' Can Increase Efficiency

By M. BROWN

Former Lecturer in Management Studies, Regent Street Polytechnic

The sociologists have 'got at' American management, and this article by a British lecturer who has recently toured the Middle West specially for BUSINESS, describes some of the ideas now being taught about how managers can encourage employees to take responsibility and give of their best.

ERE in America the problem of finding and training industrial managers is widely regarded as one of the nation's top problems. The phenomenal growth product in real terms rose by nearly tion, and new technical and scientific developments, particularly in the direction of automation-all these ment activity beyond anything imagined by an earlier generation. How is the typical executive responding to these economic and technical changes, and also to the accompanying social developments-full employment and the growth in power of the trade unions?

To find the answer to these problems, millions of dollars are being poured by industry annually into the search for new patterns of supervision, new management practices and new approaches to human relations. Social scientists, settled in universities up and down the country, and supported by funds from many different sources, are

patiently gathering material about human behaviour. In recent years much of this work has spread into the field of " leadership "-the leader and his social role, the nature of his of the economy, whose gross national duties, the effect of the different methods he uses on those he leads, one-third between 1949 and 1955, his interaction with his followers as the trend towards ever larger com- individuals and as a group, his are telling them. panies with more diversified produc- personality traits; all these have microscope.

I have just been in the industrial complicate and broaden manage- Middle West, and as I toured round talking to social research workers,

managers, union representatives and educationalists, I began to see some of the revolutionary implications of the new concepts about leadership, and also to understand some of the reasons why a small part of American industry is beginning to lend an attentive ear to what the sociologists

Whether I was visiting a factory, come under the social scientist's the headquarters of a trade union, or an industrial relations department of a university, the same problems were discussed. People were talking about or planning courses for educating leaders. And trade union leaders were as acutely aware of the problems as managements.

> Under the pressures of expansion and social change, leadership is increasingly conceived as a function which may pass to different members of a group, according to the needs of the moment. The most important work of an official or formal leader (as, for example, an industrial manager or supervisor) is providing the right kind of atmosphere, or "psychological climate," so that the followers will gradually become willing and able to make their own decisions about matters which concern them.



some of the Revolutionary Implications of the New Concepts about Leadership



#### THE MOST IMPORTANT WORK OF A MANAGER . . .

is Providing the Right Atmosphere so that the followers will gradually become willing and able to make their own decisions

Only if decisions are delegated in this way can senior executives give adequate time to the new complications of industrial life.

I have only enough space to quote a tiny fraction of the evidence which is leading to the formulation of this new approach, but on my tour I became aware that two very different disciplines, group dynamics and individual psychotherapy, were each contributing evidence leading to these same conclusions.

I talked first to the members of the Survey Research Centre at Ann Arbor, Michigan. Their researches into what makes groups "tick" and the significance of the leader's role have spread into many fields of social activity-boys' clubs and camps, children's education, vacation training groups and women's political organisations. But some of their most significant findings have concerned management behaviour in industry and commerce. They have studied groups with a high productivity and groups with a low productivity doing identical work, first among rail track gangs and then among office workers in a large insurance company; they naturally found that the main common factor distinguishing the more productive from the less productive groups was the difference in their supervision. Supervisors of the former saw their job as being one of giving attention to their workers' problems and of consulting them, while supervisors of the latter were more concerned about checking up on the workers and getting the work done.

In another survey it was found that workers were favourably dis-

posed towards management rather than towards the union in those departments where the supervisor involved them in decision-making, and the union shop steward did not. In other departments where supervisors and shop stewards were reversing these consultative roles, the union was better liked than management.

In a textile factory, productivity during a technological change-over was abnormally low in groups where no consultation took place and highest in those groups who were given the responsibility for making some decisions about the change-over process.

#### "Patient-centred" Approach

Meanwhile, from quite another not groups. pist) creates an atmosphere of "res- he has on others, and learn the skills

pect for the patient as a separate, unique, worthwhile person.'

In such a relationship the patient feels safe enough to explore his own personality; he begins to see himself more as he really is, is more ready to accept experience as it comes, and becomes less defensive, more self confident and mature-a more effective and productive member of any group to which he may belong. Dr. Rogers' 25 years' experience as a counsellor suggests that the most effective leaders are those who create an atmosphere of trust and acceptance in which the individual can develop in this way.

This approach to leadership needs to be learned. The establishment of this atmosphere is a conscious skill which needs to be practised. But it involves much more than this. It often calls for re-examination by the leader of his own fundamental concepts about people. Can he be sincere in his attitude of trust and acceptance? Does he know the effect his own actions are having on other people? So training and workshops are being established both by those who are primarily concerned with the behaviour of groups and by those who approach the subject from the standpoint of the individual.

Perhaps the best known of these source the same kind of evidence is courses, based on the group approach being collected. At the Counselling is run by the National Training Centre at the University of Chicago Laboratory in close collaboration I talked to Dr. Carl Rogers. He and with the Ann Arbor Social Research his staff are working with individuals, Centre. Two groups of 125 are They are using a chosen to attend a three-weeks "patient-centred" approach to em- Laboratory in Group Development otionally disturbed people who come at Bethel in Maine. Here, working to them for help. In the words of together in a group each individual Dr. Rogers, the counsellor (or thera- has an opportunity to see the effect

- In one training course, the engineers learned
- quickly, once they were convinced that the scheme was genuine. But the salesmen tended
- to regard the training as one more method of
- manipulating people, and learned much less
  - as a result

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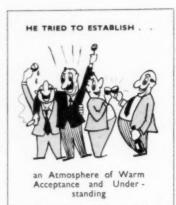
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of democratic leadership by practising them. Many past trainees are now attempting to carry this new approach into their everyday work.

Dr. Bradford, director of the Training Laboratory, told me that the programme has, for example, had a great impact on the Episcopal Church here. Traditionally authoritarian, the clergy who have been to Bethel have returned to their parishes with a new approach and are now involving their congregations more deeply in the decision making and practical problems of the church's affairs. Dr. Bradford sees the yearly increase in membership of this church to be partly, at least, a result of the changing leadership. The effect is also being felt in another traditionally authoritarian fieldthat of the Armed Forces, with a consequent modification in the training of officers.

Some industrial leaders find it hard to apply their new skills on their return to the normal hierarchy of power. One managing director of a chemical works, for example, tried to involve his managers of departments in the policy making decisions of the plant. He found them very reluctant to play this responsible role, preferring their old position of dependency and subordination. His solution has been to send the managers in groups to Bethel each year over the past five years, and he is introducing his new methods of management as the individual managers come back with a greater understanding of, and sympathy for, what he is attempting to accomplish.

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The release from anxieties and tensions freed the group to put their full energies into productive channels. The plant manager says that he had "to scoot to keep up." The men "worked harder, accomplished more," and all "with a special quality of creativeness."

This development took time and was fraught with many difficulties. Some foremen, used to dependency, felt at first very lost. Some other executives resented this threat to their traditional authority. As one executive said "Why, you're dreaming-you actually let them tell you what they're going to do."

Nevertheless, one year later the plant manager had demonstrated that "group-centred leadership" resulted in higher production, reduced costs, higher quality of production, and better long range planning.

Another outstanding teacher of democratic management in the Detroit area, Dr. Norman Maier of the University of Michigan, emphasized the same experiences-that supervisors using these newer methods have saved their companies considerable sums of money. when I later interviewed the personnel manager of one of the companies with which Dr. Maier has worked, he also confirmed this experience.

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## MANAGEMENT AT WORK

#### SALES UP 372 PER CENT

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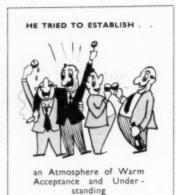


of democratic leadership by practising them. Many past trainees are now attempting to carry this new approach into their everyday work.

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## EMIDICTA

# Network

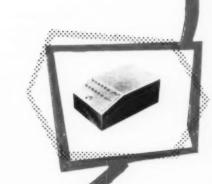
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Birmingham Sales Office: City House, 111/117 John Bright St., Birmingham 1 (Mid. 5821) Scottish Sales Office, 135 Renfield Street, Glasgow, C.2 (Douglas 6061) North Region Sales Office: Region House, Cannon Street, Manchester (Deansgate 2315) An Individual Emidicta for those with a greater volume of correspondence merges harmoniously with the Network transcription service. are mounted on separate tables which can be placed together when it is necessary to study the complete

Main savings are in drawing costs. Others are in the cost of pipework, painting, etc. By studying the model, contractors were able to make more accurate estimates of the work involved, and their tenders, on average, were 10 to 20 per cent lower than would have been expected otherwise.

The model is also being used for training operating staff. Because of its success, models are now being made of new plant at Shell refineries at Cardon and Curacao. These will cost £2,200 each.

#### WINNING SHOT

particularly ingenious direct mail shot, produced by a London agency for the Reliance Telephone Co. Ltd., won two of the awards made annually by the British Direct Mail Advertising Association.

The letter, in facsimile handwriting, was addressed to the managing director. On blue notepaper headed with the telephone company's address and 'phone number (but not their name), it began:

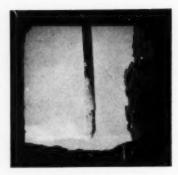
"I would like you to consider me for a position in your organization. I have had many years' experience working for busy people like you and I am sure you will find me most profitable to employ."

The next paragraph began gently to give the game away, but the payoff was held until the second page. A reply card and stamped addressed envelope (also in facsimile handwriting) were enclosed.

#### STEEL COSTS CUT

THE opening of Britain's first tonnage oxygen plant (reported on page 60 of this issue) focuses attention on what has been described as "the most decisive development in British steelmaking since the war." Briefly what this development means is cheaper steel-and more of it.

Built by the British Oxygen Co. Ltd. at Margam, South Wales, the new plant will supply the nearby works of the Steel Company of South



"The most decisive development in British steelmaking since the war . . . a probe feeds oxygen into a bath of molten steel

Wales through a direct pipeline. Using gaseous oxygen as the oxidising agent in steelmaking (instead of iron oxide or air) substantially boosts output. In some cases the increase is as much as 25 per cent.

inauguration of the new plant, B.O.C. next year. Capital expenditure in-Chairman J. S. Hutchinson gave volved is between £3 million and £4 these figures. Capital cost of a ton- million.

nage oxygen plant with ancillaries is £10 for every ton per year of ox gen. Capital cost of an open-hearth steel plant is about £10 for every ton per year of steel. And an annual output of 100 tons of steel can be increased to 110 tons by using one ton of oxygen at a capital cost of £10.

This compares pretty favourably with the £100 that would be required to get the same increase in output by extending the open-hearth capacity in the traditional way.

Another advantage of establishing a tonnage oxygen plant at a steelworks is that the capacity of the plant not immediately required as gas can be turned to liquid oxygen which can be absorbed by the ordinary liquid oxygen distribution business. This feature has a big influence on the economics of operation.

Several tonnage oxygen plants will What of the economics? At the be in operation before the end of

## Book Reviews in Brief

SCHEDULE A TAX by D. L. Forbes (Gee) 15s. Fourth edition of a professional guide to assessment and

collection of the tax.
MULTIPLE SHOP COMPANIES by V. G. Winslet (Gee) 21s. Third edition of a short text on day-to-day management problems.

THE LATIN AMERICAN MARKETS (McGraw-Hill) £6 15s. Compiled by the J. Walter Thompson Co.'s economists and international trade experts, this book covers in detail 30 market areas in South America and the West Indies, with information on land features and climate of each; population and characteristics: mineral and vegetable resources; energy and power; agriculture, fisheries and manufacturing; transport and communica-tions; imports and exports; income and standard of living. There is also a section on how to enter the markets. TRADES REGISTER OF LONDON, 1956 (Kemp's, 299 Gray's Inn Road,

London, W.C.1) 63s. delivered U.K., 73s. del. o/s. Contains more than 55,000 classified names and addresses. A HANDBOOK ON BELT CONVEY-OR DESIGN (General Electric Co.) Contains complete design information. Very well laid out, with

diagrams and tables EFFECTIVE ADVERTISING COPY by M. De Voe (The Macmillan Co.) 45s. 6d. 45s. 6d. A 'short' American text of only 695 pages, covering 'briefly' almost every aspect of designing an advertisement. For example, there are 34 pages on how to write a head-

THE CLASSIFICATION AND CO-DING OF ACCOUNTS by J. M. S. Risk (Institute of Cost and Works Accountants) 7s. 6d. A very timely booklet, for punched card and electronic equipment is only as good as the codes employed with it.

MANAGEMENT ACCOUNTANCY CONFERENCE PAPERS (British Institute of Management) 20s. complete set of the conference papers, in duplicated form, is now available.

MANUAL OF MODERN BUSINESS EQUIPMENT (Macdonald and Evans). Five more booklets are now available in the series published for the Office Appliance and Business Equipment Trades Association. They cover accountancy and book-keeping machines, visible records and reference equipment, adding and calculating machines, parts I and II, and telegraphy in business. Each bookle Each booklet costs 4s. 6d., and binders are available at 10s.

SUMMARY OF STATUTORY AND OTHER REQUIREMENTS IN THE PRODUCTION OF ANNUAL COUNTS OF COMPANIES (God) 7s. 6d. A foolscap-size booklet et out for easy reference to the app priate text of the Act.

OUTLINE OF WORK STUDY-P-1 1—(British Institute of Manageme 1) 3s. 6d. This pamphlet is based mainly on the successful experience of I.C



ROBERT LLOYD, O.B.F. His ideal: a self-contained firm

Robert Lloyd handled responsible jobs at an early age-which is why he believes so strongly that firms and industries should create bigger opportunities at their lower levels. His enthusiasm for apprentice training and long-term technical education has played a vital part in the development of his own business. So have his equally far-sighted views on the potential value of mechanization in the building industry.

## He Makes the Most of Men and Machines

he entered the building industry joiner. Seven years later, he was a fully trained military engineer, serving in France with a Field and Tun- a single contractor of experience big nelling company of the Royal Engineers. Before reaching the age of 27 he had experienced the responsibility of controlling bodies of 1,000 and more men-in and out of uniform.

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Today, 62-year-old Robert Lloyd, O.B.E., managing director of one of Merseyside's largest building and civil engineering firms, remains aggressively youthful in the emphasis which he places on the need to create Co. In this job he obtained his first a feeling of opportunity at the lower levels of his industry.

Three qualities run continuously through the career of this master builder. First, the far-sighted way in which he has always anticipated the effects of mechanization on building; second, his genuine and deeprooted understanding of the ordinary building worker; and third, his determination to throw open the senior posts in his firm to everyone who is prepared to work for them.

since Mr. Lloyd began his apprentice- chines had been used tentatively ship has seen building develop from before the war, mainly in the building a trade into an industry. At the time of docks. After the war, a few contices a year, at a time when many

OBERT Lloyd was 13 when when he joined the Royal Engineers, the industry's methods were-in Mr. as an apprentice carpenter and Lloyd's words-"Victorian in the extreme." And when he left the army at the age of 25, "there was not enough to carry out a housing scheme of 1,000 houses."

> Mr. Lloyd became general foreman to one of the larger contractors then operating, Sir Lindsey Parkinson and

#### By RICHARD BRETT

experience of the new demands which social changes were making on building contractors. Building was becoming more and more a matter for local authorities, contracts were becoming larger. Mr. Lloyd saw that a new type of firm was required-one that could control its own workshops and storeyards, one that could handle the construction of complete estates from the laying of sewers to the placing of the last roof tile.

The idea of using heavy earth-The half-century which has passed movers was spreading. These ma-

tractors alive to the needs of the day had begun to apply them to housebuilding schemes. It is typical of Mr. Lloyd that within one year of the company's formation in 1929, Lloyd and Cross had their first mechanical excavator.

An earlier company, Selwood and Lloyd, founded in 1926, had given him experience in civil engineering and contracting on a small scale. The venture was abortive, but it clarified Mr. Lloyd's ideas on what was needed to achieve success in building activities on a scale which would meet the opportunities created by the Housing Acts.

He found that an essential prerequisite of mechanized building was a steady and loyal working force. This was not an easy thing to achieve in an industry which traditionally suffered from shifting and shiftless labour. But Mr. Lloyd has direct views on how it could be done. Having been an apprentice himself, he felt that the vitality and steadiness of the industry's labour could be increased only through employers interesting themselves in apprenticeship and education.

In 1926, there were not many firms carrying out this policy; it was 20 years before the appearance of the National Apprenticeship Scheme. But small as they were, Selwood and Lloyd regularly bound six appren-









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CARIBONUM LIMITED . LEYTON . LONDON . E . 10

firms operating on a larger scale were not have been handled by any single taking on boys without indentures organization a decade before. and therefore without security. After the formation of Lloyd and Cross, the policy expanded. Today the firm firm. But even in 1939, Lloyd and now binds as many as 25 apprentices Cross were capable of tackling proa year.

For many years Mr. Lloyd has made a practice of inviting ten or 15 of the new apprentices, accompanied by their parents, to discuss with him the obligations of the firm and apprentices towards each other, and the opportunities which are available within the industry.

Altogether, it is a far-sighted outlook. Out of a labour force which averages about 1,500, Mr. Lloyd now has more than 500 men who remain with him year in, year out. Many of them are in fact ex-apprentices. Round this core of steady and responsible workers, he has built an organization which employs up-to- Cross have already implemented date incentive schemes and long-term most of the team's recommendatechnical education.

#### Long-term Aims

Before there were any legal obligations, Lloyd and Cross apprentices week until their eighteenth birthday. doing so even after their apprenticeship had finished.

Throughout the 'thirties the company were putting much of their math of the slump, Mr. Lloyd's longterm aims were never overthrown by facile opportunism arising from the fact that labour was cheap and plenti-The firm steadily built up its own fleet of transports, excavators, tractors and other heavy plant.

In 1933, Mr. Lloyd's partner, Mr. Cross, retired. By then, however, the firm was so well established that the name of Lloyd and Cross was retained.

Subsequent developments sprang from Mr. Lloyd's belief that the future of the industry lay with the firm which could "look after itself" and carry through from start to finish building schemes that could

The war delayed achievement of his ideal conception of a self-contained jects and site-preparation for large housing estates.

Since the war, the opening of a central depot at Bromborough for the repair and maintenance of their plant and machinery has considerably reduced the time lost as a result of breakdowns. Mr. Lloyd's own enthusiasm for making the maximum amount of power available to the labourer is exemplified by his attitude to his post-war tour of the U.S.A. as a member of an Anglo-American productivity team. gave me great encouragement," he says, "because we were so far behind." He claims that Lloyd and tions, especially in the sphere in which he considered that the American builders were strongest-the provision of adequate hand power-tools to on-site workers.

Mr. Lloyd's capacity for keeping were sent to school for one day a abreast of the building industry's requirements is shown clearly in the All of them who showed real promise development of his firm's incentive were urged-and allowed-to go on scheme. The idea of applying incentives was not really pressed on a national level until the 1949 wage dispute, in which the Minister of Labour intervened. Following this, profits into modern machinery and the national incentive scheme was transport. Even during the after- agreed and the company quickly put their own incentive scheme into operation on a Birkenhead Corporation housing estate. At first, only about 20 per cent of the firm's operatives were able to take home a bonus on top of their standard wages. Now more than 70 per cent are doing so.

#### Realistic Approach

The scheme shows signs of Mr. Lloyd's healthy scepticism towards the effectiveness of "indirect" profitsharing schemes. He declares: "The attitude of the men who work for me is 'if I've won something let me have it in hand.' We work on that system."

Wherever possible, it is the work

expected from an individual, or from a small group, which forms the basis of bonus payments. Standards are carefully calculated, and never on any account are they altered while a contract is in progress-so the men need have no fear of rate-cutting. During the summer months, many men earn up to 2s. 6d. and hour in bonus, over and above their standard wages.

The scheme works well-so well that Mr. Lloyd wonders why only ten per cent of the nation's building employers have introduced real measured incentive schemes.

His pet hate is any political doctrine which tends to obscure the fact that management and men form two sides of one team. He believes that the ability to talk to "the man on the site" (which he would like to see in all his managing agents) is the key to good labour relations in large building units as well as in small ones.

#### Closer Co-operation?

In 1950, Mr. Lloyd was elected president of the National Building Trades Employers' Association recognition by his colleagues of the important contribution which he has made to the industry's development during the past 25 years. One matter which is currently exercising his mind springs indirectly from his North American tour, although the vigour with which he propagates it arises from his own practical belief in looking ahead and planning. It is the need for closer co-operation between builder, client and architect. Lengthy hold-ups over drawings and essential data after a job has been put in hand are much more common in this country, he thinks, than in the U.S.A.

Although this is a national problem arising partly from the professional position of the architect vis à vis the builder, he is tackling it on his own account by advising the greater use of standardized components and modular methods of design.

In this, as in so many of the building problems which he has tackled before, he will no doubt find a solution, test it in practice and pass on his experience to others.

## How to Make Your Posters Get Results

By DON A. TIBBENHAM

Managing Director, Tibbenham Publicity Ltd.

Because the outdoor audience is constantly on the move, the poster message must be short and clear. There are certain colour combinations, such as black on yellow or white on dark blue which give the greatest degree of legibility. But no poster should be displayed for so long that it becomes part of the scene, and is no longer seen. These and other points are discussed here.

cember) dealt with all the main aspects of advertising except sheet" is composed of two "16 sheets" outdoor posters and signs. Some readers may have gained the impression that outdoor advertising is unsuitable for the firm with a small budget. And that impression would be strengthened by the success of national advertisers like Guinness, Surf, Walls and B.P. Their clever and effective use of poster sites throughout the country immediately comes to mind.

In consequence some firms feel that it is hopeless to make use of this media on a small budget, and many may look upon posters as being restricted to the "massive" sizes. But this is not necessarily so, for equally good results may be obtained from the use of single "sheet" sized posters, which measure 30in, by 20in.

A "sheet" is the unit of measure-

Y series of articles in Busin- crown. Thus a "16 sheet" poster is Ess last year (August to De- composed of 16 double crown sheets and measures 80in, by 120in,, a "32 side by side, measuring 160in. by 120in., and so forth.

There are, of course, many kinds of outdoor sites. Here are some of the main ones:

Hoardings: These refer to the standard style of hoarding on which are normally displayed double crown and up to "48 sheet" posters.

Special Poster Sites: Referred to thus because they are individually designed and erected and may be executed in 3D effect, with gardens in front and with moving items.

Public Information Panels: These are only available for non-commercial items, such as local government notices, sports meetings, concerts, etc.

Then there are buses, trolley-buses and trams, van posters, underground

station sites, painted signs and sandwich men.

Outdoor media have a more universal audience than most forms of advertising. The messages are placed before the whole community irrespective of age or class, and the viewers do not have to buy anything in order to see and read the message placed before them. In most forms of advertising the reader has to buy a newspaper, a theatre ticket, a television set and so on, but not with outdoor media. Another important point is that at no time can the reader take the message in his hand.

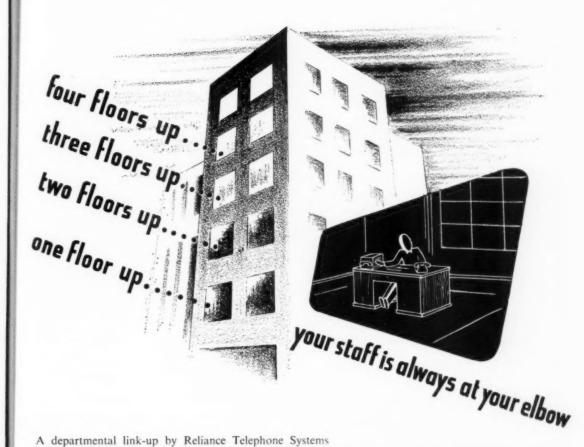
Outdoor advertising demands an entirely different technique to that of press advertising or of direct mail. The time in which the observer can see and read the message is limited by his speed of movement or that of the vehicle on which the poster is displayed. Distance must also be considered. Colour can and does play a vital role in outdoor advertising and, because the audience is constantly on the move, the message must be short and clear.

How can the concern with the small budget usefully employ outdoor media? The answer depends upon the type of business.

#### Local Traders

The local trader may find it of considerable value, especially in areas where there is a constantly changing population such as seaside resorts. The small manufacturer whose market is nationwide could use it by supplying posters to his agents or dealers for them to use on their own sites or in their windows. In fact, almost any concern whose products have a wide or universal appeal could 11clude posters in their plans.

The manufacture whose first bu lment for posters, known as a double railway cards, railway and omnibus get is small may plan to concentrate



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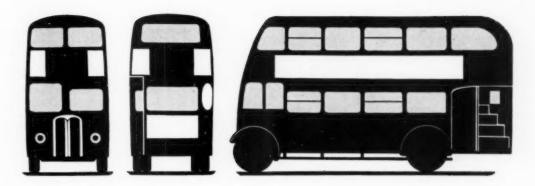
SPEEDLINE is the name and it is in two widths, a variety of colours, and it is printable. Price is **lower** than conventional tying tape. For full details quote reference 114.

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Double quick

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his sales effort in one particular area. In this case he is able to use outdoor advertising to augment his other forms of publicity or, in some cases, use it exclusively.

The retailer can make use of mass media to attract custom to his shop or store and it is of especial value should his message be a short one. The streamer on the bus-side can, in many cases, be directed by using buses to and from the suburbs of a city which serve the area where the shop is situated.

The shopkeeper can then use sandwich men to parade in the immediate vicinity and so reiterate and augment his message. If sandwich men are used, I strongly advise that they should be given correct and clean attire. A peaked cap and a white overall will suffice, but a little extra imagination always pays off.

There is little I can say about electric signs as I always feel these are so much a matter of personal taste. Bye-laws and planning acts affect signs considerably, and it will suffice to say—keep the message short and use a clear, legible type face. The electric sign makers will advise you wisely and will show you a variety of styles to meet local conditions.

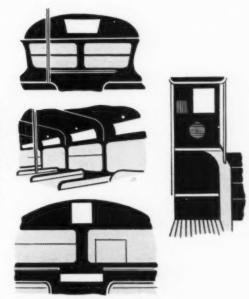
I am more concerned, in this article, with the printed poster, and it may be useful to have a few general comments on the use of colour. On the small budget it will not be an economic proposition to go into full colour reproduction. Design and massing of colour will have to be used along with good typography.

The poster, whether stationary or mobile, has to perform four main functions. These are:

#### Attention

The attention value of a poster is undoubtedly enhanced by an illustra-

It is not always appreciated that there are so many different advertising positions—even on a London bus. Some appeal momentarily to the passing outside audience, while others claim more prolonged attention from passengers. Hence they need different design treatment.



tion and by colour, and these items can also increase the interest value. In recent years there have been such advances in silk screen printing that it is now possible to reproduce half-tones, such as photographs, remarkably well. The strong use of flat colours plays an important part in poster design and colours themselves can be used to convey various ideas, feelings and moods.

Colour has great attention power and beginners will be tempted to use it on this basis alone. For example, when a colour is added to black the tendency is to make it red. This violent colour should be used with caution and rarely should a solid red background be used for reading matter. It is irritating and interferes with legibility.

The following colour combinations

tion and by colour, and these items are those which probably give the can also increase the interest value. In recent years there have been such advances in silk screen printing that over many years have given slightly it is now possible to reproduce half-

- (1) Black on yellow
- (2) Black on white
- (3) Yellow on black
- (4) White on black
- (5) Dark blue on white
- (6) White on dark blue.

Red on white and vice versa comes well down on such a list, and even lower would be the combination of complementary colours such as red and green. It should be remembered, too, that colours have associations. For instance, red is associated with heat, yellow with light and blue with coldness.

A great deal could be written on



give the impression that outdoor advertising is unsuitable for the smaller firm. This is not true—it is possible to get the same results with smaller, well-sited posters.

the subject of colour, but these brief able care and the poster contractor comments will show the important part they play in every form of mass media.

#### Interest

How can one hold the public's interest? Here again design and colour play a vital part. The unusual, the catchy phrase, the amusing, the human appeal-these are the things which arouse interest But remember the importance of change. The design and presentation of posters should be changed regularly. In fact, many posters are on display far too long and, in consequence, they become part of the scene and are no as on bus, railway and van, but the tive idea will bring. longer seen!

#### Stimulation

At some time or other you will want to stimulate some sort of action. You will want the public to feel stimulated to buy-stimulated to demand your product-stimulated to visit your shop.

There are the usual methods by making such statements as "Sale Today," "Only at this price while stocks last," and various special offers. Repetition of a message is in itself a form of stimulation.

#### Identification

This is achieved by such things as a standard method of writing the firm's name, by using the same colour combinations, by a distinctive style of presentation, by the choice of artist, or even the method of reproduction.

The choice of sites needs consider-

will guide you. But remember, some sites are suitable for one type of product and some for another. Again, some towns would require a larger number of sites than others to give adequate coverage. When placing your order for posters make sure you order sufficient to cover renewals. This will vary according to the time of year position of hoardings and number of new designs being planned.

#### Buses, Railways and Vans

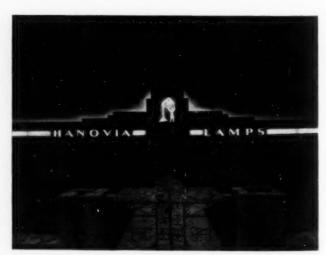
Most of these remarks apply equally well to other forms of poster such

sizes of space in these cases are much more varied. On the average type of double-deck bus, as used by the London Transport Executive, there are eleven positions-six outside and five inside. These can be seen in the illustration on page 103. There are, of course, variations of these positions on the single-deck buses.

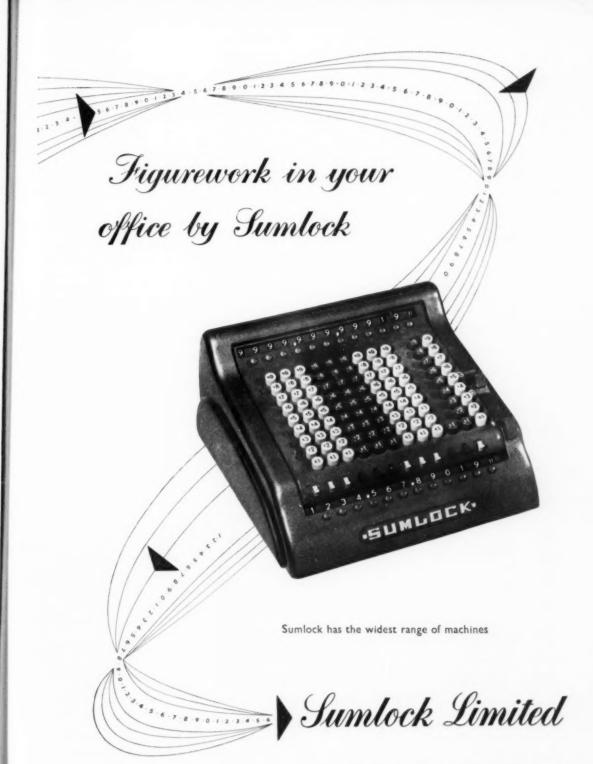
As with every other form of advertising, the poster campaign must be properly balanced and planned. It is quite useless deciding to use 32 sheet sites if, in order to obtain sufficient coverage, the money available will only permit the use of smaller posters. An odd site here and there will have its value, especially when they are in key positions or of a special character, but generally speaking the area should be adequately covered.

Mobile sites such as bus and van sides can be used to good effect, and can be of special value in areas where poster sites are in short supply. Unfortunately, there is a country-wide shortage of sites.

Cost is affected by the design of poster and, unless the number of sites to be used is large, it is wisest to stick to the minimum number of colours and avoid a mass of halftones. Simple designs in bold outlines and flat colours are always effective and it will pay to enlist the skill of a good designer. The extra cost will quickly be repaid by the greater pulling power that an attrac-



Electric signs can be extremely effective, but are largely a matter of personal taste-however, always remember to keep the message short and use a clear, legible type face.



I ALBEMARLE STREET, LONDON, W.I. Tel: HYDe Park 1331 Branches, Training Centres and Service Depots throughout the U.K.

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## This Management Was Tailor-Made

#### TO SUIT NEW PRODUCTION METHODS -

New production processes at the Westinghouse foundry, Chippenham, have made possible the transfer of many orders from skilled to machine moulding. Here is an account of the changes in the management organization of the foundry, tailored specially to make the most of the new production possibilities.

ments in the Westinghouse foundry at Chippenham, a new method of making cheap aluminium pattern plates was successfully introduced to this country. Known as the Plaster Cast Process, it is becoming more widely adopted even among foundries of smaller and medium size. It enables machine moulding to take over much work normally handled by skilled floor mouldersnotably where small runs previously made it uneconomic to provide metal or wooden patterns, suitably set up for machine moulding.

But in order to take full advantage of the saving that could result when a job was transferred from floor moulding to machine moulding, Westinghouse Brake and Signal Co. Ltd. found it necessary to reorganize their foundry so that a quick and accurate decision could be made on 300 off. The foundry division emthe most economical method of ploys approximately 300 men, but handling an order. A foundry equipped, as at Chippenham, for skilled much of the brake apparatus, the and machine moulding (light or core shop takes a sixth of the labour heavy), as well as, possibly, pressure force. Heaviest normal production mind its size and nature. In this work

FEW years ago, after experi- problems in any case. They naturally become more acute when introduction of the new plaster cast process enables far more orders to be handled.

> Before introduction of the new process, it used to take the pattern shops approximately 70 hours to set up for light machine moulding: it now takes 20 hours for similar tooling. During the first two years after the foundry had been reorganized, the output of castings per operator increased by 45 per cent, and it is still rising.

#### By JAMES NOLAN

The foundry specializes in the production of brake and signal equipment, and it is largely concerned with jobbing orders ranging from 100 to owing to the complicated nature of

matter of ounces. Although of medium size, the foundry is therefore comparable in size of orders and type of casting with many smaller foundries, and the methods it has adopted to solve its problems may well be applicable in many smaller foundries.

Previously the foundry manager was responsible for superintending all aspects of the division, and he had only the foreman and foundry engineer to assist him. One of the first steps in the re-organization was to set up four lines of authority within the division:

- 1. The Production Engineer (helped by the methods engineer and the head inspector) superintends actual production methods and is responsible for the correction of any faults attributed to pattern equipment.
- 2. The Foundry Technician is in control of the foundry laboratory, aiming at quality control and the maintenance of a high physical standard in the castings produced.
- 3. The Progress Controller is in charge of progress supervision and piecework booking. He ensures that orders are produced in a systematic way, and that the flow of output is as steady as possible.
- 4. The Foundry Superintendent, through the foremen, assistant foremen and chargehands controls shop supervision.

The production engineer and his assistant, the methods engineer, have now the main responsibility for deciding which is the most practical and economic method of production for each individual order, bearing in and gravity die casting, will have such casting is 11 cwt., the smallest a the methods engineer is helped by

recently introduced methods card part number and the equipment to be the possibility of a saving in producsystem, which ensures that every used, i.e. patterns, core-boxes, etc. time an order is placed for a coma methods card is available giving that particular part number is looked information on which to base judgments as to whether, for example, tooling-up is justified.

time, and particulars are entered on the new method. the methods card, together with a

When any repeat order is received ponent previously cast in the foundry, by the foundry, the methods card for out and passed on to the methods engineer. If the quantity has this time increased appreciably, i.e. to Although, as stated, orders of above 50, the card is put aside to be from 100 to 300 off are normal, first examined. It may be assumed that orders are frequently placed in small- the job was originally floor moulded. er quantities, so that the decision of Now, however, the methods engineer the methods engineer on the most works out the approximate cost of of first orders generally results in moulding. The most important contheir being sent to the floor moulding sideration is the number of patternsection. The job is then rated to making hours required, and upon obtain the operator's production this hinges the saving or otherwise of

Should the methods engineer see

tion costs, he seeks management approval for a change, giving approximate cost of the patterns needed and the savings expected to result. If approval is given, an accurate estimate is made of the new moulding equipment required and of the pattern-making hours involved.

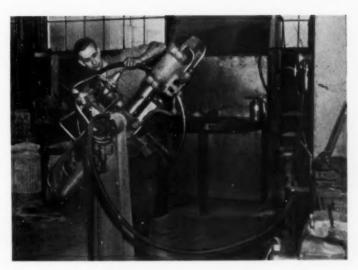
#### Balanced Load

This information, when transferred economical method for production transferring the job to machine to the progress controller, enables him to keep a balanced load on the pattern shops and to make sure that they are able to accept the order. Otherwise, he will refer the matter back to the production engineer, who will arrange for sub-contracting. In

#### **Business Picture Story**

#### Some of the New Methods Used

In addition to the administrative changes described on these pages, the Westinghouse foundry now employs a number of improvements in materials handling, which did not involve large capital expenditure but which have contributed substantially to increased productivity.



Shell core blowing (basic principles are the same as shell moulding) is now at an advanced experimental stage at this foundry. Heat from the core box partly cures sand injected into it under pressure. The core box is turned over to form a more dense core, and after a pre-determined time rolled back. Uncured sand drops back into the reservoir, leaving the hollow core to be extracted when cool. Cores made by this method have the advantage of lightness and better unblacked surface finish than their red sand counterparts, and are easier to produce. the normal event, however, the re- blowing (still partly in the experi- selves, and wherever possible they quirements stated will be drawn up for the pattern shop foreman, the equipment made and checked and then sent out for trial in the usual ed from one to another of these is the production engineer's task of manner.

The different choices open to the methods engineer by which a new order can be put into production are, in the case of this foundry, fairly extensive. As an order increases in the number required, its treatment may pass from floor or bench mould- orders are examined with a view to ing to machine moulding, and then to gravity or pressure die casting. Similarly, in the core making shops, it may be handled by hand core making, core blowing, shell core

mental stage at Westinghouse) or are re-designed or modified to large assembly breakdown

When a particular order is switchmethods of production, the methods engineer may superintend it through early production stages.

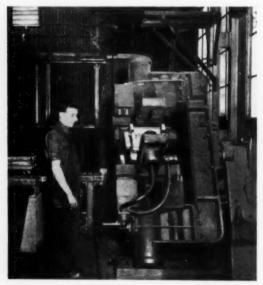
#### Improvement in Methods

The system makes sure that all possible improvement in methods of production, and as soon as quantibetter methods. Also there is a constant review of the products them-

cheapen production.

Side by side with this responsibility supervising the inspection section, It is his duty to spot at the earliest possible stage, any castings not conforming to specifications, and to detect other faults due to inaccurate dimensions or porosity. His reports on these bring him into contact with the foundry technician's and foundry superintendent's departments.

Together with the head inspector ties warrant it, steps are taken to use and the foundry foreman he works out the probable cause of the fault, and if they agree that the moulding



At the heavy core making station the whole sequence of operations from ramming to stripping the core from its box, is carried out without the lifting of either core or box. Behind the operator is the roller tracked work bench which delivers the box and core from the rammer to the roll-over and strip machine (foreground). The stripped core is rolled onto the conveyer bench (left) and the core box is returned to the rammer on the roller tracked bench.



After storage cores need to be oven dried before use. Formerly cores were off loaded from a stillage into the ovens and then reloaded after drying, to be delivered later to the foundry by hand three or four at a time. Now a mobile stillage loaded with cores is wheeled into the oven and extracted after drying, and cores are delivered to the foundry all together on a mobile hand tray.

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procedure may be at fault, a trial edges are ground off and all surplus noted the number scrapped at each casting is ordered. If the pattern is metal apart from flash is left on in stage of production. suspect the pattern shop foreman is order to give the inspection departthe fault is located and rectified. The leaves the mould. pattern is then given a thorough trial and records of tests carried out are logged in the head inspector's office.

In order not to hold up production precedence on the floor. Further- scrap record of every batch of cast- rectified. more, the trial casting, upon its first ings produced. When an order has of metal. In fact, only the rough laboratory office, on which has been bad castings to be scrapped immed-

#### Central Scrap Record

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Castings declared scrap and castordered to check the equipment until ment a true idea of how the casting ings rejected by the test rooms are collected daily, and a weekly scrap sheet submitted to the foundry technician. This enables him to see the amount of wastage in the separate This helps to keep down the scrap activities of machining, fettling and of any equipment put on trial be- rate. Another check on scrap is oper- testing each job order. If a batch of cause it is new, or has undergone ated through the scrap record card castings is seen to have a consistently modification as a result of com- system of the foundry technician's high scrap level, production is stopplaints, a test casting is always given department. This provides a central ped or held up until the fault is

Samples of all batches of die castarrival in the fettling shop, undergoes gone through production, a scrap ings are x-rayed twice daily for porosonly the removal of a bare minimum record card is placed in the foundry ity or other defect. This enables any



Patterns are sorted in the pattern shops, loaded on to mobile racks and conveyed directly to the correct moulding sections. Empty racks are sited near the moulding stations and are filled up as patterns are used and await return to the stores.



Non-ferrous metal returned from the moulding section is poured into ingot moulds which discharge directly on to hand trucks. There is no handling of ingots.

ing time.

The production engineer and foundry technician, although in separate departments, work together to detect high scrap rates at the earliest moment and subject the deficient castings to the most rigorous and systematic tests before they are put back into production.

The progress controller is responsible for much of the unavoidable paper work which accompanies the decision to produce a certain order by a certain method. He is principally concerned with four documents, the works order, the control card, the shop job and the confirm- normal, but a control card is filed the foundry or core shop, it is placed in

of a works order, he consults his loading chart which shows the capacity in standard hours for each section of the foundry. From the number of standard hours required to produce the order (facts gained from previous entries on the methods card for that item) he can see whether he can find foundry. If so, the job is loaded on, and confirmation of delivery despatched.

#### Time to Check

iately and saves fettling and machin- ation of delivery forms. On receipt same week, and job tickets are despatched to the various sections four weeks before the work is due to be produced. Plenty of time is available for the pattern store to check all equipment and to have it ready for the actual commencement of production.

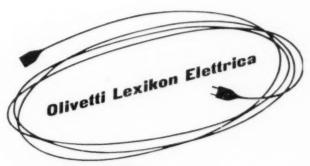
> About 100,000 patterns, core boxes a place in the required section of the and loose pieces are stored in racks in the pattern stores and are filed under their part numbers by a card system corresponding to the part number on each item of equipment. This provides for the quick location and removal of any pattern required. A ten-week delivery period is When equipment is required by the



Non-ferrous charges require the minimum of lifting and carrying. They are weighed and discharged into the furnaces using a floor scale platform and high loading mobile trucks on a level with the loading platforms of the furnace.



For the bulk distribution of cast iron from the central furnace station, the drum type ladles holding 6cwt. are replacing the conventional hand shanks (seen on the foundry floor).



#### A letter

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#### A typist

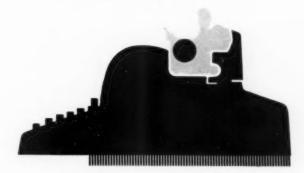
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Greatly increased speed, with very

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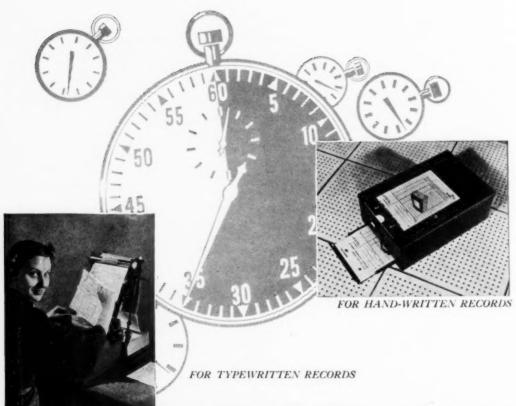
A demonstration will gladly be arranged without the slightest obligation.

### olivetti

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### Econojet — Econoset — Econorite

PETTY AND SONS LIMITED Whitehall Printeries, Leeds 12 Telephone: LEEDS 32341 racks in order of the week number required. The chargehands allocate jobs according to the job tickets which they receive from the foundry office, and these correspond to the labels attached to the patterns and core boxes.

These labels are then removed and placed with the job tickets, the operator signing his name and the date on which the work is started. In the core shops the operator's name, job number and date of commencing are entered on a card, which serves to show the whereabouts of the core boxes involved.

In both core shop and foundry office a daily record of individual production is kept. From this the wages supervision department make out time cards for the assessment of bonus earnings. These production sheets are also used by the casting inspectors in the fettling shop.

Liaison between the various production sections and the foundry office is very close. Each week the loader in the foundry office draws up a list of all jobs to be completed and cleared from each section in their week's programme. Chargehands can thus see which orders are outstanding on their summary sheets and tick off jobs as they are completed.

Prior to the loading of an order. the previous history of the part number is examined from the methods card. The previous scrap rate can be seen, and an accurate increase in the quantity to be cast can be made in order to allow for possible scrap. This enables the foundry office to ignore any castings scrapped, in the expectation that the actual number of good castings will be sufficient to fulfil the order. If, however, the scrap rate unexpectedly increases and the number of good castings produced is below the number called for on the order, it is often possible to make up the order with castings from stock (a large range and number of castings are carried in store).

When these are not available, the quantity is completed by a "makeup." The order is then closed and the quantities entered upon the history side of the methods card.

SEPTEMBER, 1956



Because of the bulk handling of molten and ingotted metal it has been possible to centralize the furnaces and establish this central ladle heating station adjacent to it. Ladles must be heated before being charged, to maintain the heat of metal while in transit.



**9** Un-used molten cast iron returned from the moulding sections is poured into pig moulds and when set, discharged directly on to a stillage for removal by truck.



At the knock-out bench in the gravity die casting section, sand cores are removed after casting is completed. Sand falls through a grid into a mobile bin which can be picked up by crane. It is thus returned for cleaning and milling without being shovelled.



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## How to Reduce Noise In Older Works

By G. R. LAMPTON

Ways to prevent excessive noise in a new building were demonstrated in our April issue (page 109). This article shows how an older works was treated to reduce reverberant noise, and so improve the health and efficiency of workers in an inherently noisy occupation.

which troubled Messrs. H. and A. this reverberant element. Scott Ltd. in their extensive Dundee iute mill.

Jute weaving has been described as "inherently a noisy occupation." One of the major causes of the noise is the impact of the shuttle against the buffalo-hide 'picker.' Since jute flat looms run at a rate of 120 to 130 'picks' a minute, the slap of the shuttle tip against the toughened hide results in almost continuous noise, which is of near-painful intensity if no preventive measures are taken.

Correct 'bedding' of machinery is, of course, essential if direct mechanical noise and vibration are to be reduced to a minimum; but after this has been done, there is little further

HE great majority of factories that can be done to reduce direct operating today were built be- noise. Total sound intensity, howfore noise prevention had de- ever, is always a combination of veloped into a science. The difficul- direct noise and of indirect noise vestigations made it possible to select ties of adapting them now to reduce resulting from reverberation. And noise may be exemplified by those effective action can be taken against

#### Reflective Materials

ises, the large open working spaces together, without actually being and the hard reflective materials used closely compacted. The tiles there-

in the construction of the factory had the effect of sustaining the level of reverberant sound for very long periods. To quote actual figures, readings on a standard sound level meter showed that the noise level at the machines was 105 decibels. Yet as much as 18ft, away from the looms, the meter still recorded a level of 104db. Some way had to be found, therefore, of 'soaking up' the noise from the looms as quickly as possible, cutting down the intensity of the reflected sound, and with it the total noise level.

The first step was to carry out an analysis of sound frequencies in the building, and thus to discover the predominant frequencies. These ina suitable absorbent material for acoustic treatment of hard surfaces. The choice fell upon cane fibre tiles of 11in. thickness.

In these tiles, the individual cane fibres have barb-like projections At Messrs. Scott's Dundee prem- which enable them to link strongly

The first step was to carry out an analysis of sound frequencies in the building, and thus to discover the predominant frequencies

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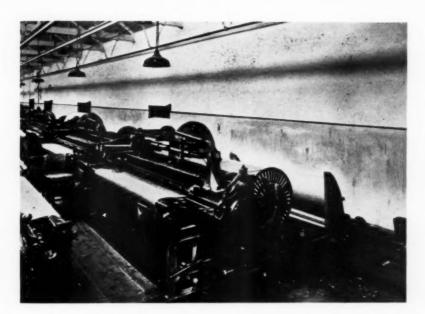
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fore have an open structure. Also, each has a regular pattern of small holes penetrating to within in. of the back of the tile. Sound waves enter these holes and are then dissipated in the air cells between the fibres. Thus, reflection of sound is greatly reduced.

The total volume of the mill buildings to be treated at Dundee was 88,000 cu. ft. Within these, there was little to absorb sound, apart from the persons of the employees working there. But, on examination, it was found that cane fibre tiles could be applied to roof slopes and certain wall areas up to a maximum of 8,500 sq. ft. And it was estimated that this application would reduce noise by a substantial amount.

The tiles were fixed with adhesive to the walls and roof slopes. After fixing, they were painted into the factory colour scheme. This had no effect on their sound-absorbing quality, for the size and spacing of the perforations is such that painting, by brush or spray, does not clog them.

Another set of meter recordings was then taken. It was found that 18ft, from the looms the noise level was around 92db. (compared with 104db. before treatment). As the decibel scale is logarithmic, the refirst appears. For a reduction of even installation of the absorbent tiles, by their efficiency and health,



The hard wall and ceiling surfaces before treatment, contrasted with the soft cane fibre surfaces afterwards. Even directly beside the jute looms, there was a reduction in noise of 43 per cent

three decibels means a change in in- greatly reducing reflected sound, tensity of around 50 per cent.

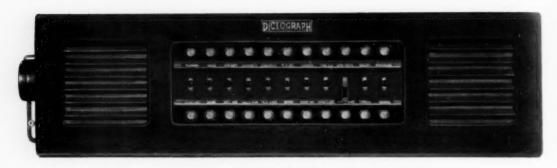
Under the new conditions, even hausting for the employees. directly beside the looms, there had

made working conditions less ex-

Machine operators in factories can been a reduction in noise of 43 per generally tolerate a fairly high level cent. Naturally enough, conditions of direct noise, because this is somein the mill still do not compare with thing they expect. But it is the addiduction is more impressive than at those in say an office. Nevertheless, tional reverberant sound that affects



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## Punched Cards Speed their Sales Statistics

#### By MARTIN BOOKHAM

To produce week-by-week breakdowns of sales figures, the Wiggins Teape Group have a department 40 strong, built around a punched card installation which does no work other than sales analysis. From its tabulations and summaries elaborate statistical and economic reports are prepared so that top management is kept supplied with up-to-date, accurate and digestible information.

T the London headquarters of should have an alarm mechanism. . . world-wide paper manufac- at the right time. turers and converters, a complete punched card installation and some plete a supply of facts and figures 40 people are solely devoted to sales about the firm's operations as posanalysis. In the course of a year, sible, so that almost any query can over one and a half million cards are be answered as it arises, or with very punched and tabulated in this sec- little trouble. tion, quite independently of the accounts department. The result is a collection of sales statistics that makes many other firms' efforts at sales analysis look amateurish.

there is no real reason why a clock everything that is happening.

His aim, in fact, is to have as com-

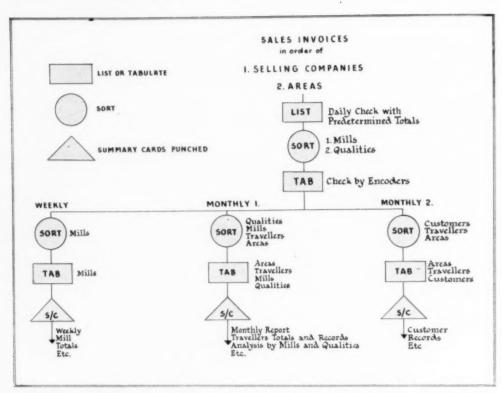
#### Invoices Received

His department receives a copy of every single invoice handled by any "It can be argued that there is company within the group, both here really no need to have a statistical and abroad. Together with producdepartment at all," says P. H. Hall, tion information from the mills, these the department's manager, "just as invoices enable it to keep abreast of address, type of business and rele-

As the invoices arrive in daily the Wiggins Teape Group, unless, of course, you want to get up batches, clerks translate the information they contain into the numerical code necessary for punching cards from them. Selling company, mill, quality, weight and value of the paper sold and other details are scribbled as code numbers onto the actual invoice. But as the code for the customer runs into several figures, a special system is operated for it, to cut down the possibility of error:

Every customer of the group has a card in a plain card index that is kept by the department. Attached to that card are a number of slips of paper on which customer's name, vant code number have been printed

The majority of the work done by the statistics department circulates mainly at directorial level. But it is the group's policy that no expenditure is too great if it results in a supply of reliable information on which major decisions can be based



This diagram illustrates roughly one-eighteenth of the flow chart for detail cards punched from sales invoices at Wiggins Teape. The original cards are first listed for checking against a pre-determined accounting total, then processed to produce the various weekly and monthly reports as shown. Thereafter it is mainly summary cards that go on to provide further analyses

by an addressing machine. Every some idea of the way in which this is time an invoice for that customer done. arrives, one of the slips is attached to it. By this means the punch operator they are still in the order in which is able to work from first-hand information. The system involves a certain amount of extra work, but panies and sales areas. The first has been found to reduce errors considerably.

After encoding, and after the customer's slip has been attached, the invoice passes to the punching room, where its details are recorded on 36column cards. These are doublepunched and run through a verifier. in order to detect any discrepancies.

With that, the raw material of the analysis system is ready. The cards are now sorted and tabulated over and over again, until enough tabulations exist to produce not only the immediately required figures, but any probable future ones too. The processing chart on this page gives

After the cards have been punched, they were sorted and encoded: in alphabetical order of selling comsorting rearranges them according to mills. A simple tabulating and summarizing operation then produces a weekly return showing sales totals for each mill in the group.

The tabulator that does this job is set to produce a summary card auto-

The tabulations are also used to produce permanent records. Departments in the group may request the statistics section to compile reference books. indexes, etc. for their use matically each time it produces a sub-total. This enables later stages of the analysis to proceed with comparative ease. If the production of annual sales figures, for instance, meant sorting and tabulating a year's accumulation of individual invoice cards, the work would quickly get out of hand.

The statistics department undertakes certain routine tabulations at regular intervals. The most important of these are:

- 1. The weekly sales totals of mills, which we mentioned above.
- 2. Monthly sales totals for each customer.
- 3. Monthly totals for all the different qualities of paper sold.
- 4. Quarterly totals of sales broken down under travellers and quali-
- 5. Half-yearly sales totals under

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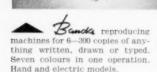
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Perhaps no company can provide the answer to every business problem. But the coverage of the B & A range is so extensive that even in these pages we cannot give you a complete picture of the machines and methods we have designed to speed and simplify office control, to eliminate needless repetitive clerical work, to provide the executive with the means of achieving simple and effective factory and office control. Users include almost every trade and profession in the country.

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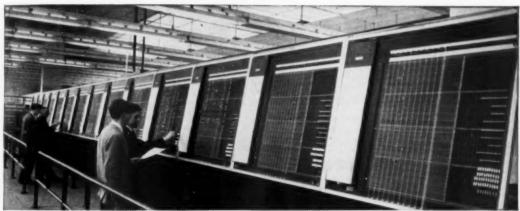
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Only one model of each series has been illustrated on the facing pages; there is not room to show every piece of equipment available. And how can we illustrate the Service we place at your disposal . . . advice, demonstrations, consultations, instructions to operators, machine maintenance, supplies and so on? The network of B & A Branch Offices and Showrooms has been built up to cover Great Britain—based on twenty-three principal cities and towns—so that trained representatives are available at any time, no matter where your office is situated. Just write to our Head Office for information on any range of B & A machines—or for advice in general on your business problems—

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#### Some U.K. factories using B & A. machines and systems







TOP RIGHT · Aerial view of NEWMAN INDUSTRIES LIMITED of Yate, Bristol.

 $\begin{tabular}{ll} \begin{tabular}{ll} TOP LEFT: & Aerial view of RALEIGH INDUSTRIES LIMITED \\ of Nottingham. \end{tabular}$ 

BOTTOM LEFT: Aerial view of the head office and main works of JAMES HOWDEN & COMPANY LIMITED of Glasgow.



#### The B & A range of machines



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customers and qualities.

6. Yearly comparisons of all totals with those for the previous year.

These returns go mainly to the sales directors of the various units within the group, sometimes with a copy to the accounts department for crosschecking. It is, in fact, true to say that the majority of the statistics department's work very rarely goes may seem to be robbing it of some years. usefulness. But further consideration shows that this policy is a wise Instead of the department flooding group headquarters with wave upon wave of complicated very little to most people in any case, it aims all its efforts at providing adequate information and background material to those men, and those alone, who have to base major decisions on it.

A certain amount of information is abstracted from the tabulations to be kept in various ways for reference within the department. For instance, the analysis of sales by travellers (4) is used to keep up a comparative table, on which the amounts of each quality sold by each traveller over a number of years are shown. Reference books are also kept, compiled from other tabulations, listing customers under selling companies and travellers, and showing details of purchases. This particular work is one of several statistical activities intended for lesser executive grades, and was requested by the travellers themselves.

Other specialized work of this sort goes on within the department, of which two particularly elaborate reports, intended for the board of

directors alone, deserve description in detail.

One is a half-yearly statistical survey, which contrasts various aspects of the group's activities with comparable national figures. Thus, the group's productivity level is contrasted with national productivity, group sales with national consumption, exports with exports, and so on. In each case the figures are also below directorial level. At first this compared with those for preceding

#### Semi-log Charts

For greater clarity, the figures are facts and figures, which would mean illustrated with charts, but in order to compare group and national figures, semi-log charts are used. In these the vertical axis, instead of being marked off in even divisions, according to the unit in question, is marked off in a logarithmic progression. Thus, company figures (at a low level) can be shown on the same chart as the corresponding national figures (on a very much higher level). Furthermore, because the progression scales down any peaks or dips in the national level, as patterns, or trends.

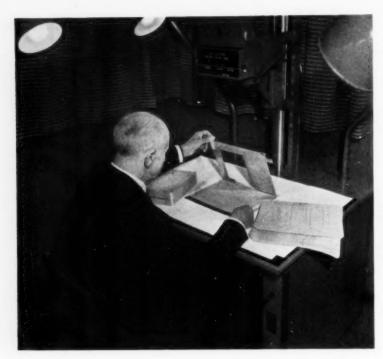
concerns the group's overall trading by the management.

picture. This elaborate compilation is spirit-duplicated in four colours, and is profusely illustrated with barcharts and graphs. Its object is to state exactly what happened, in terms of trading and manufacture, in the six-monthly period in question. Actual happenings (i.e. sales results) are broken down to show where and when they occurred. But the report is not concerned with why they occurred. General trends are briefly described in the terse statement that accompanies each table of figures, and major factors affecting trade would, of course, be mentioned. But in the main, the report is only concerned with facts. Their interpretation is left to management.

Only seven people in the whole organization see this report: the chairman and six other top executives. But it is the group's policy that no expenditure or effort is too great if it results in a supply of accurate, up-todate and necessary information on which major policy decisions can be based.

The punched card installation at Wiggins Teape is not required to do any accountancy, and exists only for sales analysis. But the importance attached to its work has led to the ordering of still more modern equipment. The current installation can deal only with coded information, and only produces coded answers, whose interpretation is an arduous and lengthy task. With the new equipment, however, the tabulator will automatically interpret the code, and print results in words as well as figures. With that, the department will be able to function more rapidly the two lines are directly comparable and more economically. Its possibilities will be even greater, limited The other report, also half-yearly, only by the demands made upon it

"It can be argued that there is really no need to have a statistical department at all, just as there is no real reason why a clock should have an alarm mechanism-unless, of course, you want to get up at the right time"



One retired worker is employed for two and a half months to microfilm the statements. graphs more than 2,000 daily, and could reach 5,000 in a day if the accounts were fed to him without interruption

## How Microfilming Can Save Time and Labour

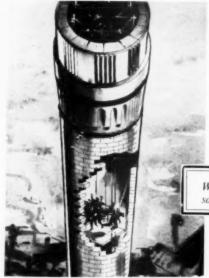
A microfilming unit at the Alliance Building Society's Brighton headquarters allows them to prepare over 49,000 annual statements at a lower cost than with their previous manual methods, and without disrupting normal office routine.

By PHILIP CAISTOR

quickest, most economic and photoprint acting as the statement.

HE problem of finding the part of each mortgage account, the

most accurate way of preparing 
The statements have to be sent out customers' statements is common to as soon as possible after the end of most firms. If they can spread this the financial (and calendar) year, work throughout the month or year, without disrupting normal office that is a great advantage. But at the routine. But before they can be pre-Alliance Building Society, whose pared, a 100 per cent comparison of headquarters are at Brighton, over deeds with accounts must be made 49,000 statements have to be pre- by the auditor. So no matter how pared and despatched early in the perfect the internal organization year to all members of the society may be, the speed with which the who hold mortgage accounts. This statements can be prepared is dtask is simply and economically per- pendent on the speed with which the formed by microfilming the relevant auditor works. And on such



#### THIS JAM WAS LETHAL

Four men descending from the top of a new chimney were riding on a materials hoist when the hoist jammed owing to unequal thickness of the guides, and some slack ran out in the rope. The jam then cleared itself but the brake failed to hold the platform, which ran free until the slack was taken up with a jerk.

Two passengers were shaken off and killed.

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on the advice of a firm of consultants who were called in to look at the society's methods in 1948. The society's management were preparing for the day when a relaxation copying, and then at a pace dependof restrictions on private building would result in a rise in house mort- checked daily by the auditorsgage business.

#### Proved Wise

That their preparations were wise, is now proved. Since 1948 the society's assets have risen from £18 million to £55 million-but due to the office methods installed in 1948, no great difficulties in organization have resulted from the rise in volume of business.

microfilming the statements it is necessary first to look at the methods used prior to 1948, when the number of mortgage accounts was only 14,500. The accounts were kept up-to-date daily on seven accounting ing work. And manual copying has and a mast, fixed in the centre at the

the account-constituting about half The microfilming unit was installed the data on the account-was manually copied on to a statement. But since all accounts had to be checked with the deeds, it was often over a week before a start could be made on ent on the number of accounts sometimes too many and sometimes too few. This meant that for about two months, the machine operators had to drop their normal routine work and concentrate on copying the statements. Meanwhile, of course, their daily work piled up.

#### Big Problem Solved

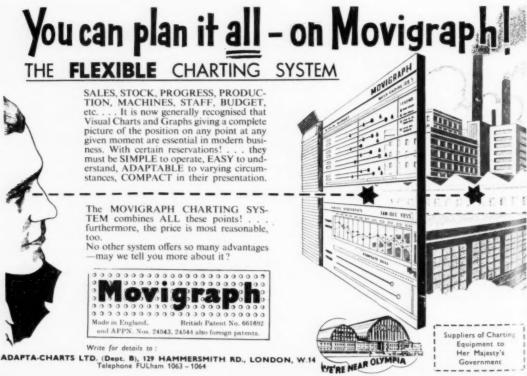
The problem of the auditors still remains. But the problem of copy-To appreciate the advantages of ing statements without disrupting normal office routine was solved by the introduction of the microfilming unit. Instead of accounting machines, the Society now uses punched card equipment to handle its account-

painstaking task, his pace is neces- machines. The relevant section of been replaced by microfilming. The photoprint sufficies as the statement proper. A frame, held over the data on the account not to be photographed, bears explanatory notes which are common to all statements.

> The system ensures 100 per cent accuracy, for the accounts are not microfilmed until they have been checked and 'ticked' by the auditor.

> The Society's share and mortgage department works on a monthly cycle, all accounts being posted in turn once a month. All transactions are daily punched into cards, then collated at the end of the month to be posted to the accounts in one operation. Even accounts on which there have been no transactions, are put through this process. To facilitate easy microfilming, only one side of an account card is used each year.

> The microfilming unit used at Brighton is designed so that unskilled labour can operate it without supervision. The apparatus consists of a table, housing the controls,





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machines

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one. She (abruptly): If you get that, I go.

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back of the table, on which the takes approximately 1,600 photocamera may be moved up and down. graphs. The direct cost of the system The means for focussing are simple. The document to be filmed is placed in a marked area on the table directly There is a beneath the camera. mask in the camera which, when a lamp is switched on, throws a rectangular area of light on to the subject. The extent of the area of this light shows exactly the area to be filmed. The camera is moved up and down on its mast by an electric motor at the touch of a switch. When the correct focus has been found, the main lights are switched on, giving adequate light on the subject.

The frame, which masks out the unwanted data on the account, is held in a hinged jig within the marked photographing area. The account is slipped in the jig, the frame is closed over it, a footswitch is depressed, the photo is taken. The film in the camera automatically indexes to the next position. The account is removed, the next one is put in, and so

Each roll of film is 100ft, long, and

compares favourably with the cost of preparing statements on accounting machines. Each roll of film costs £1 13s., and is developed for £1. Printing, done by a local photographer, costs £13 10s. per 1,000. Thus the overall cost per statement is approximately 31d. (excluding labour).

#### Uninterrupted Routine

But the important point is that routine work can continue while the statements are being microfilmed. The society employ one retired worker for about two and a half months, and he is quite capable, without overworking himself, of coping with a daily output of 2,000 statements a day, in spite of having to collect his ledger trays from a considerable distance, and sometimes being held up when the trays were being used elsewhere.

Taking a hypothetical case (which could have been very close to fact at Brighton) of seven accounting mach-

ine operators working an eight-hour day, producing 20 statements an hour each, the daily output would be approximately-and optimistically-1,120. Compared with this, microfilming represents a considerable saving in both time and labour. Approximately 40 out of every 100 working hours have been eliminated.

Time taken to develop and print a spool of 1,600 frames is approximately 10 days. The photoprints are not sent out as they are received back from the photographers, but held until all statements have been prepared, then sent out in one mailing. This is usually about the second week in March.

This may seem a considerable time after the end of the financial year, but it should be remembered that the speed of preparing the statements depends solely on the speed with which the auditor works.

The microfilming system is proving more valuable each year, as the society continues to make further progress. Last year alone, new mortgages amounted to over £11,300,000.

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In a series of 15-minute conversations the sales manager and the representatives discussed market prospects and selling tactics. Each conversation was recorded on an office dictating machine. Later the recordings were played back to other executives and to representatives of the company's advertising agents transcribing them into a written report would have lost the spontaneity.

Sixteen salesmen took part in this conference-by-phone. In time, it cost the sales manager little more than an hour a day for four days—while each representative had to give up only 15 minutes. Men "on the road" made their calls from telephone booths or hotel rooms.

Ten days' notice was given before

the calls started, so the salesme, had plenty of time in which to think things over and to seek the views of customers or potential customers.

The sales manager made no attempt to "interview" the men. He was interested primarily in getting their own ideas concerning the most effective means of promoting and advertising the product.

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WHEN filling a staff vacancy, an office manager often has to spend more time than he can spare on interviewing applicants—some of whom turn out to be quite unsuitable. Here are two ways of keeping "wasted" time to a minimum:

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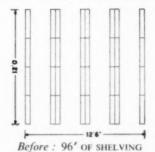


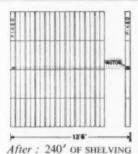
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THEN 23 girls from all walks of life, who had never seen each other before, can work, play and laugh together, and then part, each with more knowledge and more experience of subjects ranging from make-up and good grooming to interior decorating and democracy, it seems to me a great achievement. . . . "

Those words were spoken recently by a young girl employee of a large oil company, who had never before made a public speech. She was paying a tribute to the National Association of Mixed Clubs and Girls' Clubs under whose guidance she had just taken a one-week residential "Girls in Industry" course which often seems to achieve a transformation in the shy, embarrassed, and even "problem" girls who attend it.

The National Association cater for a variety of girls who work in factories, offices, stores or canteens. Sometimes they run a course for all those categories together. To help the Youth Employment Officers, they also have a short residential course for girls who cannot stay in one job. At the end of it, such girls are likely to discover in themselves a new stability and a new interest in their work.

This is not surmise, but hard fact, supported by the testimony of personnel and training officers in industry and commerce. For example, a women's staff manager of one of the "Big Five" banks wrote to Dr. J. Macalister Brew, the education and training adviser for the Residential Courses for Girls, saying how

## Helping Industry's 'Problem' Girls

By ANDREW B. ROBERTSON

A short residential course run by the National Association of Mixed Clubs and Girls' Clubs often makes a remarkable transformation in girls who have previously had difficulty in settling in one job or in getting on well with other employees. This article describes the methods-and some of the

much she appreciated the detailed leavers, who so often find difficulty and helpful reports on the girls, to whom she referred as her two "guinea pigs." She was quite definite in her belief that "rubbing shoulders" with the other girls for one week on the course, had stretched their minds and personalities beyond what even the girls themselves had realized was possible.

Several aspects of these course are likely to interest firms which employ large numbers of young girls. School-

in settling down in factories or offices, have been catered for by special courses, and many local education authorities have taken a direct interest in these. Then there are courses specifically designed for "problem" girls-girls who may be a bad influence on the working group or who cannot fit into a particular working environment. It is here that the National Association has had marked success.

Take the example of Anne, a 22-year-old filing clerk. Her firm complained of her bad time-keeping and absenteeism record. They said that she adopted an extremely independent attitude-but admitted, when pressed, that she had potentialities which might make her a valuable employee. Although Anne had a good home background, she was an only child and had been described in her youth as "highly strung" by her doting mother; in consequence she had been allowed to have her own way in everything. She appeared to be rather lonely and the



The National Association's "Industry course also caters for girls earmarked by their firms as poten-tial charge-hands or section leaders. Those who attend it are kept busy-and not only at humdrum tasks!

SEPTEMBER, 1956



In the one-week programme, group discussions and creative activities are combined with outdoor recreation

other girls at work did not take to her.

The instructors on the course to which Anne was sent by her departmental head, felt that they should concentrate on helping her to see that she could not expect other girls to have much time for her if she always wanted to have things her own way.

During the first morning on the course-the Monday-after the in-

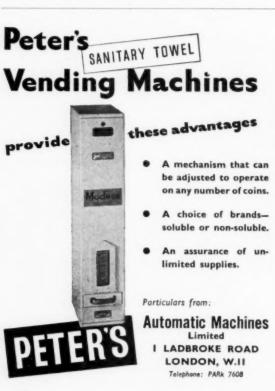
are encouraged to talk about themselves and their home background, Anne admitted in the discussion (called on the programme "Our Jobs") that if things had not gone right at work she had a "headache" and stayed at home. She also complained that "the other girls never treated her properly."

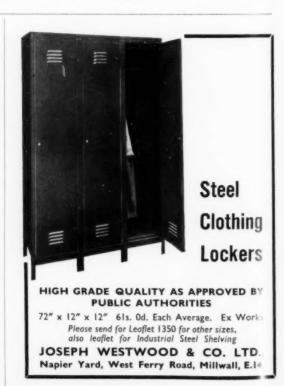
The instructors believed that they were able to help her a little, but were not wholly satisfied at the end

report. They were surprised to receive a reply from Anne's firm, some weeks after her return, saying that since going to the course she had not been late for work. This case illustrates a number of points, the most important one being that the National Association's trained instructors are very realistic and modest in their approach to their work. They do not think that they can work miracles by changing a girl's personality and outlook in one week. The remarkable thing is that they do in fact achieve recognizable results in such a short time.

#### Courses Enjoyed

The head of staff training at a large London department store wrote: "We were delighted with the girls when they returned from Avon Tyrell; they had enormously enjoyed the course. . . The girl who on her report I had described as being "turned in upon herself". . . . was so much more friendly and her mooditroductory session at which the girls of the week, and said so in their ness seemed to have evaporated.







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P— brought me her log book straight away, and she has obviously put a very great deal into it, and both she and J— said how much the course had awakened interest in everything that went on around them.

"It seemed to me, to sum up, what the course had managed was to widen their horizon, make them aware of a great deal that they had not noticed or appreciated before, put them at ease in their world and in some way sent them back much more at one with themselves.

"I would not like to claim too much from a single week's course, but it was the flow of vitality and energy that particularly impressed me about them." The writer then went on to say that she hoped to be allowed to send girls regularly to these courses.

Held at one of the National Association's three centres—at Kilmory Castle, Argyllshire; Kilvrough Manor, South Wales, and Avon Tyrell, Hampshire, each course accommodates 30 to 35 girls. Briefly, the instructors' approach is to

"break down and build up." The introductory sessions are calculated to bring the girls out and to get them to talk about themselves, their work and their personal problems. Then, through discussion groups, creative activity and the planning of the final Friday night dinner party (all done by the girls), the course helps them to feel that they have poise, personality and resource. To achieve this, the staff are as friendly as possible and do not allow a "we and they" atmosphere to develop. Without adopting an autocratic leadership, they firmly but persistently keep the girls busy through the day and evening at intellectually stimulating tasks and activities.

#### Social Skills

Among the many things the girls learn in preparation for the dinner party are committee procedure, including a great deal about community and civic activities, afterdinner speaking and other forms of public speaking; acting as hostesses;

and generally brushing up their social skills.

A staff manager usually has neither the time nor the freedom of action to discover the right way to develop the junior girls on his staff. He may be lucky with some, but find himself less lucky with many others. There is plenty of evidence to show that the National Association courses can be of great help to managers who find themselves in this position.

A senior executive of a large group of companies manufacturing medical supplies sent seven girls on the courses; later he wrote to Dr. Brew that five of them had been promoted to chargehands, and that the courses had been of very great value in this way. In fact a great many firms do select what the National Association refer to as "promotable" girls or "girls with potential." The Association's industrial liaison officer. T. Frankland, says that they are hoping to extend the courses for promotable girls (which now cater for the age group 17 to 23) to include some girls up to the age of 26.

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We are now in a position to supply these towels at a price that will enable them to be sold through our machines at 2d, without incurring a loss.

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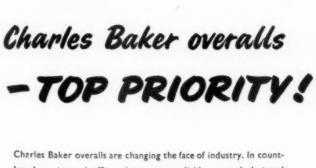
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BUSINESS



less factories and offices these neat, stylishly cut and designed overalls-often in subtle pastel shades-are brightening working hours for thousands of women. Managements especially approve their durability (thanks to the wide choice of hard-wearing materials, including poplin, rayon, nylon, and highest grade satin drill) and the fact that they can be washed again and again without losing their shape. Make a note to get in touch with our Contracts Department immediately. They'll be glad to give you full details of our comprehensive service, as well as quoting you for your requirements and sending examples of the various materials. We can deliver at an early date, in most cases by return.



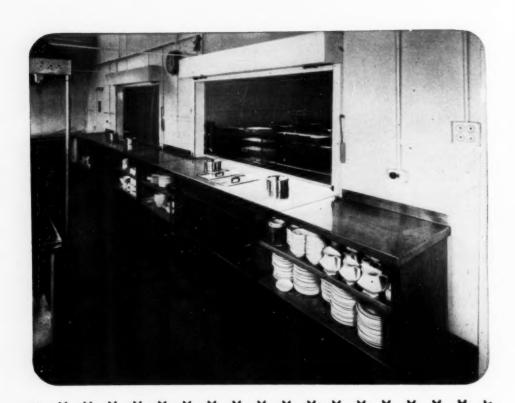
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## Always Something New in

## This Canteen

By WINIFRED McCULLOUGH

Senior Canteens Adviser, Industrial Welfare Society

At Yardley and Co.'s East London factory is one of the relatively few works canteens which really please their customers. Helped by a generous subsidy, the catering adviser has introduced a number of innovations-including a well-stocked club counter in the staff dining room, and a special slimming diet

large dining rooms. The personnel Yardley's.

F the 800 people who work at catering adviser, C. H. Tabord, are the Stratford, E. London, fac- justly proud of this high percentage, tory of Yardley and Co. Ltd., but they are not content to rest on perfume and soap manufacturers, their laurels. Nor is the chef, about 600 have either lunch or a mid- J. Stephens. There is always someday snack in one of the canteen's two thing new going on in the canteen at

a clearcut canteen policy and set a definite budget. The policy is generous: briefly, the canteen has to make a maximum of 25 per cent over the cost of the raw materials, and to cover replacements of crockery and cutlery; everything else is met by the company. On one occasion recently Mr. Tabord exceeded these expectations-so the canteen's customers found themselves eating a free lunch to celebrate this fact!

Experience-and Enthusiasm. Mr. Tabord advises on catering at all the company's factories, but he is especially at home in this one. He is a chef and the son of a chef. At the age of 12 years he helped in his father's kitchen. Since then he has handled the catering in ships and army camps as well as in hotels and works canteens. Above all, he is an enthusiast, always on the look-out for new ideas.

Something Special. His latest "baby" is the club counter in the staff dining room. On an impressive open manager, E. G. Pearson, and the Generous Policy. The company have counter, covered with immaculate



At a new club counter in the staff dining room customers can choose a variety of salads-including some semi-exotic dishes



The works dining room also has a snack bar for employees who do not want a full meal. "Home-made" cakes are among the items sold there



The store at Yardley's canteen is a model of neatness and order. Everything is bought wholesale

white cloths and presided over by an equally immaculate chef, are dis- But at the club counter customers played salads, cold meats, lobster choose just what they want, receiving tails, sardines en gelee, cold eggs, a chit which they present to the table Well-chosen menus. Yardley do not succulent cuts of cheese,-even such waitress when she gets their coffee offer an elaborate menu, but a good semi-exotic items as cole slaw.

Hot dishes are waitress-served.

or directors' dining room at Yanley's canteen, and the club counter is as popular with the managing director as it is with many of the employees.

In the works dining room, too. there is a snack bar where those who do not want a full meal can get an appetizing snack, an excellent "home made" cake or any combination they fancy.

For Slimmers. To the best of my knowledge, Yardley's is the only canteen in England that offers a reducing diet. It also has a convalescent and preventative diet for ulcer sufferers, and a bland diet for anyone suffering from stomach troubles. All these are authorized by the doctor. The reducing diet is very popular amongst male as well as female staff. It is not too hard on either the canteen or the domestic budget.

and sweet. There is no executives' choice of noticeably well-cooked



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## STREETLY MELMEX WARE



THE STREETLY MANUFACTURING CO. LTD. 1, Argyll Street, London, W.1. · Telephone: GERrard 7971



Mr. Tabord, the catering adviser, is an enthusiast - always on the look-out for new ideas

food is available each day. Two typical menus are shown below. In both works and staff dining rooms the day's menu is exactly the same.

#### Menu 1

Green pea soup	d,
Fried fillet of sole, tartar sauce	
chipped potatoes 1s. 5	d.
Steamed fillet of sole, tartar	
sauce, creamed potatoes 1s. 5	d.
Garden peas3	d.
Cold buffet various prices	
Compote of pears and custard 5	

Tapioca milk pudding
Menu 2 Roast beef, horseradish sauce,

roast and boiled potatoes, ......4d. Rice pudding..... Apricots and custard ......4d. Spaghetti on toast.....8d. Special lunch (curry, rice, potatoes, runner beans).....1s. 6d.

All Use Break Services. Literally

everyone in the factory and offices takes advantage of trolley or waitless service morning and afternoon. In the morning tea, coffee, milk, rolls and sandwiches go out; in the afternoon, tea, cold drinks, milk and

Shorter Queues. Three years ago, Mr. Tabord substituted cash registers for the former ticket system. He finds it saves time on the queues and also means faster accounting; and he does not feel there is any lack of security. People in staff dining room pay on a weekly lunch card which is written up by the waitress but collected by the wages department.

Key to Economy. The store is a model of neatness and order-and of good buying. Here one sees no small sizes, no unknown brands, no dejected stocks of rusty tins mutely testifying to the "good buy" that wasn't. Everything is bought wholesale: fruit, salads, vegetables, direct from market; meat from Smithfield.

The Staff Stay. The staff consists of Continued on page 179



You and your staff will benefit from a broadcast system. You will benefit, too, from the easy and rapid location of your key people, and announcement facilities which can keep you in close contact with all personnel. TRIX have nearly 30 years' experience of public address systems and, no matter how complex your require-ments may be, they will plan a system exactly meeting your needs, based on a comprehensive range of equipment, tried and proved in installations throughout the world.

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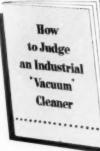
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SEPTEMBER, 1956

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For nearly 50 years now 'National' Autograph Recorders have

thoroughly proved this method of attendance recording — suitable also for small workshops — in offices all over the world. And in so doing they have thoroughly proved themselves as well. It is an essential piece of equipment for the modern business, and so for punctuality's sake get your Office Manager to get all the relevant information. Have a word with

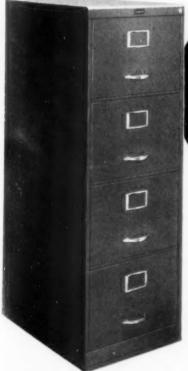


There's a Portable Model as well as a Standard Model, both of which are spring driven, synchronous drive A.C. Mains or Master Clock controlled as a matter of choice. No signature can be made until the time record is printed, and being one of the 'National' range of Time Recorders, it is untamperable.

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SEPTEMBER, 1956



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#### said the Chief Accountant

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There are several basic methods to choose from, and all provide innumerable signalling facilities—signals that stay with the card for easy reference, be it inside the tray or out of it—signals that pass through every kind of posting machine.

Yes, they will even convert current machineposting cards to DEFINAC VISIBLE without



re-writing, and in most cases without the expense of new trays, quite a unique service.

And, of course, CREDIT CONTROL. This is a novel application of DEFINAC signalling, showing at a glance the credit position of all cards, and well worth your while investigating.

You should see DEFINAC VISIBLE to appreciate its possibilities, but why not send for their brochures, in any case?

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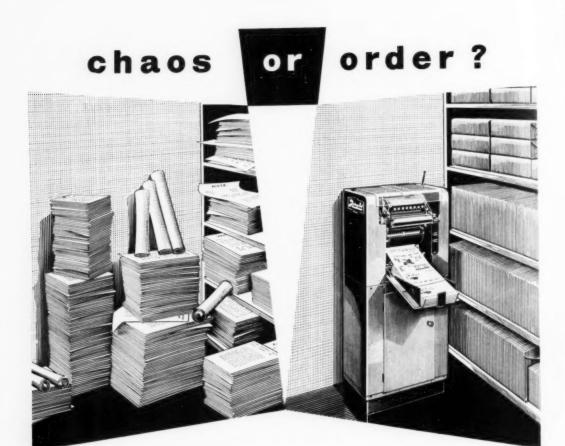
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How much space do you waste in stationery storage? Have you rooms filled with old catalogues and out of date forms? The Rotaprint method of printing enables you to print smaller quantities at one time thus minimising the risk of accumulating obsolete print. This is because repeat runs are so economical and jobs may be stored on thin metal plates in the minimum of space.

JUST THINK OF THE CONVENIENCE of printing office and accounts forms — booklets, catalogues and folders. The latter with a quality of reproduction that will make the sales staff really sit up and take notice.

The coupon below is for your convenience and involves you in no obligation at all.



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H.16

Please send, without obligation, printed specimens and full details of Rotaprint.

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Pin this Enquiry Form to your letterheading and post to ROTAPRINT LTD., HONEYPOT LANE, LONDON, N.W.9.
Tel: COLindale 8822 (12 lines)

#### FOR YOUR OFFICE

#### Deaf-aid Phone

PROGRESS in the miniaturization of electronic components has now made possible the production of a "deaf aid" telephone which does not involve-as in the past-the use of a large and cumbersome amplifier. Because of the compactness of germa-



Amplifier is inside

nium transistors, the amplifier is so small that it can be housed in the telephone itself.

Two models are available of the new instrument—which should prove a boon to the hard-of-hearing. The first is powered by its own battery, which also is housed within the telephone. No external wires are used, and apart from a small volume control knob at the top, the instrument looks just like an ordinary desk telephone. The battery is a standard T8 torch type, and since the current consumption when the instrument is in use is only in the region of 1.3 milliamps, an extremely long battery life can be expected.

The second type operates from the line voltage where a central battery telephone system is used, thereby eliminating the need for a battery within the instrument.

Both instruments are fitted with a volume control, and the level of

speech at the receiver can be adjusted to suit invidivual users. A limiting resistor is also fitted, so that when the volume control is turned to the lowest limit the level of speech received is approximately equal to the normal unamplified level.

The advantages of the new instrument are not restricted to the hardof-hearing. One large organization are using it in their internal telephone system where lines are long and incoming speech is weak. In this case, a pressel switch is fitted to the handset, so that the microphone inset can be disconnected while the user is listening, thus preventing the side-tone from distracting his attention.

Enquiry Ref. No. 0.9 1

#### How to Keep Cool

SMALL, noiseless and efficient, the new *Dragonfly* electric fan is eminently suitable for use as a personal



For personal use

fan in offices workshops, etc. Its moulded blades make it unusually safe under all operating conditions.

Input of the motor is 10 watts. The fan is mounted on a polished coiled stand, and a 6ft. length of three-core flex is supplied. The manufacturers believe that it is the cheapest fan on the market at present.

Enquiry Ref. No. 0.9/2

#### Quick Adding

THE low-priced Adsum adding machine has a full-sized keyboard which provides a setting capacity one penny short of £100,000 and a totalling capacity one penny short of £1,000,000. Farthing models are also available.

The fully flexible keyboard, with concave anti-glare keys, allows cor-



Full-sized keyboard

rection of a single figure or the immediate return to zero of all keys. Correction can be made at any time before the operating lever is actually depressed.

Subtraction is as easy as addition, and the machine will instantaneously give a true credit balance. For simple invoicing or multiplication, a repeat key is provided. Each key has a positive lock and even if the

★ Equipment included in this survey is selected for its news value alone. The names and addresses of the manufacturers or distributors of items mentioned can be obtained by writing to the Editor, BUSINESS, Mercury House, 109-119 Waterloo Road, London, S.E.I, quoting the appropriate reference numbers. Manufacturers are invited to submit details of new and interesting products for consideration. An original photograph should accompany each item submitted.

operating lever is misused, the figure set will be registered.

Weighing only 8lb., the Adsum takes up less desk-space than a quarto sheet of paper. A neat carrying case is available.

Enquiry Ref. No. 0.9/3

#### All-purpose Adhesive

A N adhesive which combines the properties of the various types of glue, gum and paste used for different jobs in the office is now being marketed in a convenient tube with special extruding nozzle. Hitherto it has been available only in large cans for industrial use.

Known as Evo-Stik 528 impact adhesive, it makes immediate and permanent bonds. It is equally effective with rubber, plastics, metal, glass, pottery, porcelain, wood, leather and fabrics.

Enquiry Ref. No. 0.9 4

#### New-style Furniture

HE Hanover executive desk (shown here) is among the latest range of



Executive elegance

made available in this country. Curved in shape, it has a natural

Other items in the new range include:

The Tenor cabinet from Norway. Made in elm, it has a drop front and is designed to house a recording machine or record player. Accessories, recording tapes, etc., are stored in small side shelves, which can be removed, if desired, to permit the vertical storage of records. The top of the unit is large enough to take a radio or television set.

contemporary office furniture to be mark. This has a figured mahogany Made up of three electrically-inter-

top, with dished solid edge. Two pedestals are hung between the legs: the left-hand pedestal has three shallow drawers, one slightly deeper drawer and a glass-topped pull-out slide; the right-hand pedestal has two small accessory drawers, three shallow drawers, one slightly deeper drawer and a glass-topped slide. At the back of each pedestal is a lockable cupboard, fitted with an adjustable shelf.

Enquiry Ref. No. 0.95

#### **Punched Tape Checker**

Now that punched tape is finding new applications in the electronic data processing field, there is need for a much greater degree of accuracy in the methods of preparing it. A straightforward typing error in an ordinary teleprinter message is almost invariably obvious to the reader. But a mistake in a coded tape which feeds information into an electronic machine has more serious consequences.

For this reason the introduction of The Executive desk from Den- the Creed tape verifier is timely.



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Take a document - any document up to 8½ 14 inches. A document full of complicated data, figures, symbols, sketches. Give it to the 'Verifax' Copier.

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One of the Broadcast Relay Service group of companies

board, a tape reader and a reperforator), it permits: (1) the automatic examination of a previously-punched tape; and (2) the production of a second tape containing none of the errors detected in the original.

The original tape (which may have been prepared on one of several types of machine) is placed in the tape reader, which is situated on the right of the keyboard. A second operator then types from the manuscript again this time on the verifier keyboard.

The three units are connected in such a way that if the combination for the depressed key agrees with the combination sensed by the reader, the same combination is punched in

connected units (a five-wire key- the verified tape by the reperforator. If, on the other hand, the depressedkey and sensed combinations differ, the key is locked in the "down" position and the perforator cannot operate.

> The operator then inspects the manuscript and decides whether the fault is his, or whether it lies in the control tape. If it is his, he depresses a special "unlock" key (which mechanically releases the locked key) and then depresses the correct key-thus punching the correct combination into the verified tape.

> But if the fault is in the control tape, the operator depresses a "reader out" key which shorts out the faulty combination in the control tape and

allows the reperforator to punch the correct combination from the key which he depressed in the first place. After the reperforator has done this, the key is unlocked automatically.

The new verifier has a grey hammer finish. It measures approximately 20in, wide by 11in, deep by 12in, high (to the top of the message pad). When not in use, the message pad folds flat.

Enquiry Ref. No. 0.96

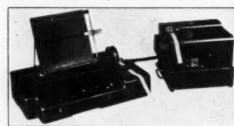
#### **New Tape Dispensers**

THREE new Speedfix tape dispensers are now available.

The PSD/2 is an improved model for dispensing tape in any pre-determined length from 1 in. to 4 in. It accommodates tape of any width from lin. to 2 in.

The Speedfix Tysealer applies a self-adhesive closure to filmic bags. The neck of the bag is dropped across the tape and then withdrawn, the ends being removed with the cutter provided. Capacity: 72 yards of tape.

The Speedfix Label-rite dispenser accommodates self-adhesive Label-



This new verifier automatically picks up errors in teleprinter punched tapes





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the Byron

ADDING LISTING MACHINE

#### Electric (Model E 7S)

The ULTRA E 7S offers a 10-column listing and 11-column totalling capacity, direct subtraction and automatic credit balance. High-speed, 12-key keyboard for fast touch operation-altogether an invaluable aid to quicker calculations.

#### Hand Operated (Model H8-S)

An ideal adding listing machine at a really competitive price-having many useful features found on electric machines: whole number key to change from sterling, direct subtraction and automatic credit balance.

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Tape for time-saving teleprinter communication . . . for local or remote operation of punched card accounting equipment . . . for electronic computer input for automation systems and other modern business machines. Punched simultaneously with visible typewritten copy . . . easily, accurately and at any typist's speed.

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(Please mark appropriate square.)	for an appointme	
NAME		

ADDRESS

SEPTEMBER, 1956

165

#### Business equipment survey



Handy working surface

rite tapes of any width up to 1in. A simple single-screw fitting adds a convenient writing platform to the standard dispenser (as illustrated), thus providing a working surface for the addition of stamped or written details.

Enquiry Ref. No. 0.9/7

#### "Streamlined" Intercom.

A NEW streamlined intercommunication system makes its debut at the Southampton Business Efficiency Exhibition this month. In appearance, it resembles the same manufacturers' Soundmaster loud-to-loud system.

The master unit has a highly sensi-

tive microphone housed in an attractive circular grill. This gives good quality reproduction even when spoken into from some distance.

Master station calls take priority over those from substations, and connection can be obtained instantly by pressing the appropriate key. When privacy is required, the lifting of a hand receiver-housed at the side of the microphone unit-automatically disconnects the loudspeaker.

Normal lamp and buzzer signalling is provided.



'Master' calls take priority



Withstand hard use

#### Enquiry Ref. No. 0.9/8 Heavy-duty Cabinets

Soundly constructed, yet offered at competitive prices, the new 8000 range of general office filing cabinets is capable of withstanding almost any amount of hard, everyday use.

Two- or four-drawer foolscap models and four-drawer quarto models are available. All are supplied with or without automatic locking.

The finish is eggshell gloss stoved enamel. Colours: olive green or warm grey.

Enquiry Ref. No. 0.99



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desk prices range from £21.6.6 to £108.15.6





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Oak Desk





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If you have a problem involving furnishing and decoration or display—then see what we can do. Trollopes have long been experts in this field. We have all the resources for producing first class work at competitive cost.

Our activities cover every aspect of the interior of a building — furniture, decorative treatments, carpets, upholstery, fabrics, electrical work and also exhibition stands. Schemes will be carried out to architect's designs or we have our own design studio at the service of clients. Whatever your requirements large or small — why not see what we can do?

Write for our new booklet — "Introducing Trollopes".

If you are interested in contemporary furniture also ask
for the "International Modern" brochure.

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### INDUSTRIAL EQUIPMENT

#### HACHINE TOOLS

Hydraulic Draw Bending

MOST recent addition to the range of Staffa tube bending machinery is a series of hydraulic draw bending machines. Available in seven sizes, they are suitable for bending steam pipe and other tubes and sections of from 1in. to 12in.

Features include an indicator which allows the angle of bend to be predetermined by setting a pointer against a dial; an arrangement of mandrel and booster rams, both concentric with the mandrel rod; hydraulic clamping of the tube to the centre former, obviating the necessity for a revolving arm or any other projection beyond the outside of the tube; the building-up of centre formers in malleable iron segments; and



Pre-selected angles

arranging the height of each machine so that the work is at bench level.

The hydraulic systems of the machines (with the exception of the motor driven pump) are made from units of the standard Staffa range.

Enquiry Ref. No. F.9/1

Compact Spark Eroder

THE Swiss-built, Eleroda D.1 spark erosion machine has precision slideways on the main column, on which the workhead is vertically adjustable by means of a hand wheel, and a co-ordinate table with scales reading to 0.001in, for accurately positioning the work. It is claimed that work can be carried out with close accuracy, due to the mechanical



Instantaneous spark quenching

rigidity of the machine. Also, the positioning arrangement enables two or more holes to be eroded with one electrode accurately to the required spacing. A hydraulic servo mechanism, claimed to be of unique design, is built into the head for feeding the electrode to the work and maintaining a constant pre-set voltage gap.

The electrical equipment is housed in the column of the machine, making it very compact. Mounted on a hinge, the complete control panel may be swung out to give access to all electrical components (no electronic valves are used). Six settings may be selected on a rotary switch on the side of the column, giving a series of cutting speeds, each speed being proportional to the surface finish obtained. A dial on the control panel also gives 20 variations in the power output.

At the lowest cutting rate—the one giving the highest surface finish-the machine operates at approximately 11 megacycles. The pulse form is controlled to give instantaneous spark quenching. An interlocked transparent safety guard ensures that the current can be applied to the electrode only when the guard is in position.

Enquiry Ref. No. F.9/2

Copy-Turning for Big Jobs

N addition to general centre lathe work, the SR14 lathe, fitted with hydraulic copying equipment, is suitable for copy-turning large diameters and faces. Full-sized master components can be used as templates for copy-turning-they are mounted on the template carrier at the rear of the bed. Carriers are also provided for flat-template copying, both longtitudinal and traverse.

The copying slide is mounted at 45 degrees to the lathe centre line, thus allowing 90 degree shoulders and 20 degree re-entrant angles to be turned. The copying system consists of hydraulic stylus controlled equipment. Intricate shapes can be copied at a speed impossible by hand: frequent gauging is unnecessary, and the accuracy of the work is independent of the skill of the operator.

The lathe and the copying equipment are manufactured by two separate companies. Similar copying equipment is available for adapting most types of existing machines. The manufacturers claim that the addition of their equipment can be effected at a fraction of the cost of a special-purpose machine.

Enquiry Ref. No. F.9/3

#### MATERIALS HANDLING

Lengthwise Carrying

SINCE orthodox fork-lift trucks are designed to carry their loads across the forks at the front of the truck, they do not lend themselves easily to transporting long, bulky loads such as timber, pipes or long crates. The Irion fork-lift carrier overcomes this limitation. It embodies a side-operating principle, in



For narrow gangways or open roads

which the load is carried lengthways along the decks and is equally disposed over all four wheels.

The 6ft.-wide carrier can therefore operate in a gangway of little more than its own width. It can also be used on the open road.

The Irion is driven alongside the load with its mast in the retracted position. The forks are lowered to the level of the bolsters on which the load rests and the mast assembly is extended to the off-side, bringing the forks under the load, which is raised clear of the carrier's decks. The mast assembly is then retracted, the forks are lowered, and the load is deposited lengthways along the decks.

Complete operation of loading or unloading (in which the procedure is reversed) takes approximately 40 seconds. The maximum load of 6,600lb. can be raised from ground level to 10ft, in ten seconds.

When handling tubular units, the mast assembly may be tilted back

slightly so that the load rolls to the back of the forks, giving an added safety factor. All operations, including movements of the mast assembly, forks and jacks, are controlled from the driver's seat, which is protected by a tubular steel frame on the loading side. A red light on the driver's instrument panel warns him when the jacks are extended.

Overall measurements of the Irion are: width 6ft., height 8ft. 2in., length 13ft. 9in. Turning circle is 9ft. inside diameter. The carrier is fitted with hydraulic brakes on all four wheels, with a parking brake on the rear wheels. It is powered by a diesel of 30 h.p., and has an average top speed of 15 m.p.h.

#### FINISHING

For Removing Millscale

A NEW form of shot-blasting gun, the High Production, gives a high rate of millscale removal from flat



No dust or flying abrasive

Enquiry Ref. No. F.9/4 steel plate before fabrication. The gun is used in conjunction with the manufacturer's Senior machine.

> A small blast cabinet is fitted with a rotating nozzle assembly consisting of three in. blast nozzles. An 8in.wide blast-cleaned path is obtained

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**HOT DIP GALVANIZED** 

Be weatherwise-use the new inexpensive slotted angle that stands up to heavy duty come rain, shine, damp or steam. It's Stonehouse HD slotted angle, made from high quality mild steel rustproofed by hot dip galvanizing. It's supplied in eight foot lengths complete with cadmium plated nuts and holts.

Specification: Stonehouse HD slotted angle is made in 8 ft. lengths from mild steel angle 3" x 1½" x 14g. and hot dip galvanized. Shelving is made from 20g. tight coated galvanized steel sheet 'Galvatite' cut into 3 ft. lengths and formed into a rigid box-form pressing. Underside flanges are slotted both ends for convenient single hole fixing on slotted angle members.

Stonehouse HD slotted angle Compare the price with paint finished slotted angle!



SLOTTED ANGLE 1/5 a foot (Quantities greater than 1,000 ft. 1/4), or over 2,000 ft. 1/4.)

STANDARD PACK... 66. 16s. (Comprising twelve 8 ft. lengths with 75 cadmium plated nuts and bolts.)

SHELVING 5/10 each (36" x 6" x 1") HINGES 2/9 a pair; 30/- a dozen pairs;

CASTORS 7/- each.

Orders or requests for further information should be sent to Dept. B.2., Pressed Metal Division, Williams & Williams, Roften Works, Hooton, Cheshire. Or call at our showrooms at 36 High Holborn, London, W.C.1 for a practical demonstration.



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171

with each pass of the gun, and millscale can be removed at a rate varying between 300 and 600 sq. ft. per hour, depending upon the surface to be cleaned.

Only one operator is required. The plate to be descaled is placed on the floor and the gun is moved on to the plate. A switch on the gun handle sets the gun in motion. It moves automatically across the plate at a pre-determined speed; the operator has merely to walk behind it to guide its course. As there is no dust or flying abrasive (because of the automatic reclamation of the abrasive by the machine), the operator does not need to wear protective clothing.

A variety of abrasive sizes can be used, thus enabling the fabricator to offer any surface profile.

Total operating cost, including labour, is said to be less than one penny per square foot of steel cleaned. If required, a completely automatic system can be installed, so that the gun is controlled and operated by a power-driven traversing and indexing mechanism. This automatic type of installation should prove useful where exceptionally large areas of plate have to be cleaned.

Enquiry Ref. No. F.9 5

#### For Delicate Painting

THE L.910 spray gun was originally designed for use by female operatives in trades where sensitivity, delicacy of control and lightness of weight are desirable. It is especially suitable for the production painting of small articles where a high rate of paint flow is unnecessary and where fine shading or stencilling is called

The spray width is quickly and finely adjusted by a knurled control screw on the side of the gun. Operator fatigue is reduced by the lightweight duralumin-forged body.

The gun can be fed from a pressure container, gravity bucket or syphon cup. It has a needle adjustable for



Its lightness reduces fatigue

wear, and a wide variety of nozzles for different sorts of paint spraying. Enquiry Ref. No. F.9 6

#### PROCESSING

#### New Stud Welding Gun

THE barrel of a new stud welding gun is hollow, so that the reverse end of studs can be accommodated inside the gun. This means that lin.,

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LIFTS 5-cwt. to 4ft. 11ins.

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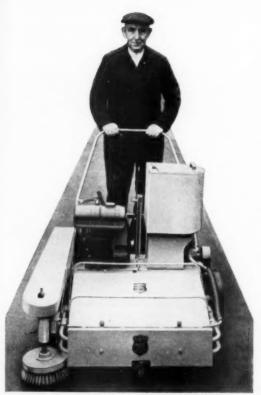
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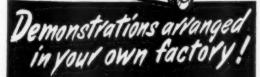
These light, easy-to-handle machines enable the "old hand" to make a good job of factory sweeping and cleaning in much less time.

For medium or large areas the power-

operated model (above) is ideal. Where floor-space is smaller, the hand-propelled model will meet the case.
Both models are strongly built, and extremely efficient.

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Three spring tensions

in., in, or in, mild steel studs can be used, up to a maximum length of 8in. with the standard support leg.

Any plain or normal threaded type stud can be welded-as can standard mild steel wire nails, split-pins, wood screws, countersunk and cheeseheaded B.A. screws. Accurate placing of studs is possible, since the support leg is fitted with a positioning foot with bevelled edges, enabling the hairline register marks to be perfectly aligned with centre line scribed on the workpiece.

Quality of welds is affected by the amount with which the stud projects beyond the plane of the support leg tips. The gun is fitted with a vernier adjustment, permitting exceptionally fine control of this distance. There are also three different spring tensions to alter the pressure with which the stud is forced into the weld pool. These can be varied to suit overhead, vertical or downhand operation.

The gun operates from any standard A.C. arc welding transformer giving a minimum of 70v. open circuit. Special plant is not necessary.

Enquiry Ref. No. F.9/7

#### PACKAGING

#### Permanent Packing

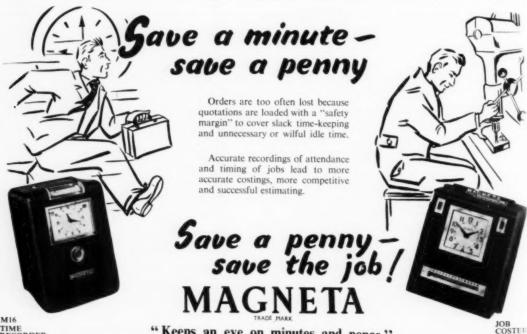
having been used only once. The



Saves time and labour

which has had considerable success in Germany, consists of a packing case of steel or light metal, which can be used again and again.

The box can be unfolded and folded with only a few manipulations. MANY conventional packing When unfolded, its component parts are rigidly connected to each other, giving great stability, and therefore Omnibox, a new system of packaging lessening the possibility of damage



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DOUBLE PEDESTAL AND SINGLE PEDESTAL DESKS

Features include :

Clean, modern design.

Lino-covered top with anodised aluminium retaining bead.

Alternative arrangements of drawers (3 Box drawers or 1 Box drawer and 1 filing drawer in either pedestal of Double Pedestal Desk; 3 Box drawers or 1 Box drawer and 1 Filing drawer in Single Pedestal Desk, with pedestal on right or left).

Box drawers run on nylon glides and fitted with rubber stops.

Filing drawers on fully ball-bearing progressive suspension arms.

Recessed plinths below pedestals to provide toe-space.

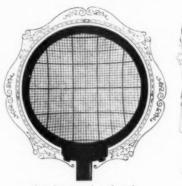
Suspended Filing Chassis in Filing drawers if desired (either cross-filing foolscap-width or full depth quarto-width).

Stationery Inserts for Box drawers if required High-grade finish, stove enamelled over phosphate coating.

Standard Colour, Scarborough Grey with Black lino top. Other colours to order. EXPORT: The construction of these desks enables them to be completely knocked-down for shipment.

Harvey

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Actual camera shot of graph paper through a spherical magnifier at 2X magnification.

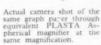
## **ASPHERICS**

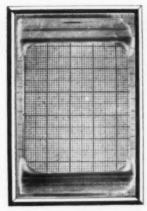
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"Looking

Vith apologies to Lewis Carroll







PLASTA magnifiers have these added advantages :-

Alice soon found out the disastrous results of distortion, engineers, too, know that the average spherical or cross cylinder magnifier not only distorts but causes undue eye-strain over long periods of inspection.

PLASTA ASPHERIC magnifiers reduce distortion to a minimum, right to the very edge of the field of vision. Furthermore, they can be used with binocular vision (i.e. both eyes at once) for any length of time without strain.

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All PLASTA Lenses are virtually untreakable in normal vse ard can be used under conditions where there is the risk of glass breaking.

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FLASTA magnifiers are invaluable in applications where the use of a glass lens would constitute a hazard.



JSP COPA I

SEPTEMBER, 1956

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#### Business EQUIPMENT SURVEY

SAVE **FLOOR SPACE** 

In every business, the efficient use of floor-space is of prime importance, and a good business demands an adequate method of storing extra or unused chairs.

The REDRO NESTING CHAIR is a strong, light-weight and comfortable chair which, when not required, can be stored in an absolute minimum of space.

15 chairs, nesting one upon another, can be quickly and easily stacked in about 5 square feet of floor-space.

The REDRO NESTING CHAIR is one of the lowest-priced chairs on the market, and is available in a choice of 12 colours in easy-to-clean stove enamel, or in a chromium-plated finish.



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#### REDRO LTD.

(Dept. 28), Cogan Street, Hull

during transport. The knee-type lock links can be safeguarded with lead seals-only two are necessary to make the box safe. This leads to considerable savings in labour when packing or unpacking. It is claimed that 500 folded Omniboxes take up the space normally required for only 100 wooden boxes of comparable size.

Each Omnibox has a tiltable address holder, attached to the cover. The name and address of consignee can be affixed to the front side of the holder; the address of the sender is always on the reverse side. Thus the consignee has only to tilt the holder to address the case for return to the This saves time, and obviates the possibility of false addressing. Lead seals, seal wire and punch pliers for sealing are available.

The Omnibox is made in five sizes. It also has a smaller brother called the Postbox-a light metal folding box suitable for parcel post. Method of folding and unfolding is the same. Enquiry Ref No. F.9/8

CANTEEN

Freezes Fresh Food

WO separate temperature zones are provided by the new Prestcold Automatic Eight refrigerator. Apart from day-to-day storage space at 40 to 45 degrees F., it has a very low temperature compartment which is cold enough to freeze fresh foods such as fish and meat, poultry and game, vegetables and fruit. It will keep frozen foods for months.

Total storage capacity is 8 cubic feet, and the frozen food locker (fitted



Keeps frozen foods for months

with a drop-down door) holds the equivalent of 30lb. of packaged frozen food as well as three quickrelease ice trays. Immediately below the frozen food compartment is large plastic tray for storing uncooked meat cutlets or fish.

There are two pull-out plastic crispators at the bottom of the cabinet, and four shelves inside the door. Built-in lockers are provided for cheese and butter, and the two lower shelves are designed to hold bottles.

Enquiry Ref. No. C.9 1

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WELFARE

Sit Down To It!

WHEN an employee has to look after a machine of some length, and has to work on it from one end to the other, it is usually impracticable for him to sit down. A new seat has been developed which slides from side to side, and thus permits the



Slides from side to side

worker to sit at his bench or machine all the time, and to carry out operations which would be awkward or impossible from a fixed sitting position.

The seat is mounted on a pair of rails, set 61in, apart and supported on four cast-iron legs, 20in. above the floor. The seat slides freely to and fro on four brass roller wheels. On the standard model, the rails are 3ft. 8in. long, but units of any length can be supplied.

Multiple units can be made, with a number of seats grouped side by side along a length of rail. To ensure stability, the entire unit is screwed to the floor. Enquiry Ref. No. W.9 1

#### GRADUATE TRAINEES

Continued from page 74

the instructor only a passive or supervisory one. The time each apprentice spends in a shop or department would not depend on some arbitrary ruling, but purely on the amount of time it takes him to complete specific observations and investigations there.

#### Conclusion

The experiment we have described opens up a new approach to graduate training, and one which has not yet received the attention from industry which it undoubtedly deserves. Here is how the report evaluates it:

"The pressure on the student was considerable. He never had time on his hands and his interest was maintained at a high level throughout most of the exercises. He appreciated the relationships between different departments in a way which would not be made apparent by merely spending periods in separate departments. . . .

"It is recognized that the Napier Research and Development factory, engaged as it is on production for development, is not typical of industrial concerns in Britain, and that the exercises used there cannot be transferred automatically to the study of other concerns. . . Further researches are therefore required to establish the best ways of undertaking this kind of training in works of other types."

Perhaps some research could also be instigated on behalf of nontechnical graduates, to see whether similar techniques might pay equal dividends in their case. It is not hard to imagine a stimulating exercise built, for example, round the organization chart of a headquarters builting in a large firm.

But the details themselves are latively unimportant. What is rely needed above all else is a new offlook on graduate training by litish industry. The bogey of the o-year course should be laid low once and for all, and serious attending given to adapting whatever aining is necessary to the capacity of the graduate mind.

BOLTON

SEPTEMBER, 1956



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Put a cross against the language and give your reason for learning. Reason

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Lockers have been spec-ially designed as inexpen-sive lockers for works use. Made in 22G steel throughout, with hat shelf, coat hook and louvred door. Fitted with 6-lever locks to with 6-lever locks to differ, or hasp and staple for padlock. Can be sup-plied with 2, 3 or 4 compartments. Prompt Delivery.

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### WELCODIX EQUIPMENT

COMPANY LIMITED

Ironbridge, Shropshire, Tel. 2360

#### DEMOCRATIC MANAGEMENT

Continued from page 92

0

new approach in a situation where the top and bottom layers of management had remained undisturbed. He replied that he taught this method of management because it was the most efficient method he knew, and that the day-to-day actions of his trained supervisors demonstrated this. They were consequently influencing both higher and lower executives to follow their way of managing.

#### Selection for Training

Dr. Maier also had some interesting views on the selection of persons for training in democratic leadership. He said: "So far we have tended to pick people who are good mixers, who get on well with others. These people are not necessarily the best material for training in these new skills," In support of his statement he said he had recently trained two groups, one a group of salesmen already skilled at approaching people and the other a group of engineers. The latter were at first suspicious, asking what new tricks he was trying to put across. But once convinced he was genuine, they learned quickly and well. The salesmen tended to regard his training as one more method of manipulating people, and learned much less as a result.

So a democratic leader may need a different combination of potential traits from the traditional authoritarian leader. Intelligence is important, and so is flexibility. Social graces and easy manners may even, by contrast, prove a hindrance.

I have said that for our age, this is a "new" approach to leadership. Part of its value lies in the research work which makes the first foundations look as though they may stand the test of time. But although the research is new, we cannot claim that we invented the idea. For did not very old Chinese philosopher sav: "But of a good leader who talks little when his work is done, his aim f filled, they will all say, we did the ourselves."

#### CANTEEN PROFILE

Continued from page 154

Mr. Tabord, Mr. Stephens, a head cook, a pastry cook, an assistant cook, a vegetable cook, an assistant vegetable cook, a storekeeper/clerk, and 17 general assistants, trolley girls and waitresses. The general assistants etc. are paid 2s. 11½d. an hour; assistant cooks get 3s. 2½d.; the head cook 3s. 4d.

There are no bonus schemes. Canteen staff enjoy the same holiday and sickness benefits as other factory staff. They are members of the contributory pension scheme.

There is almost no labour turnover. The few who leave do so because of marriage or retirement, or for family reasons.

Watching their Health. All canteen staff are medically examined on engagement. Every day, the nursing sister examines their throats, hands etc.

Overalls are supplied and laundered free by the firm, who have their own laundry. After a good deal of enquiry and experiment, it has been decided that rope-soled shoes are safest and most comfortable for work on tiled floors; shoes of this type are supplied to all canteen assistants free of charge.

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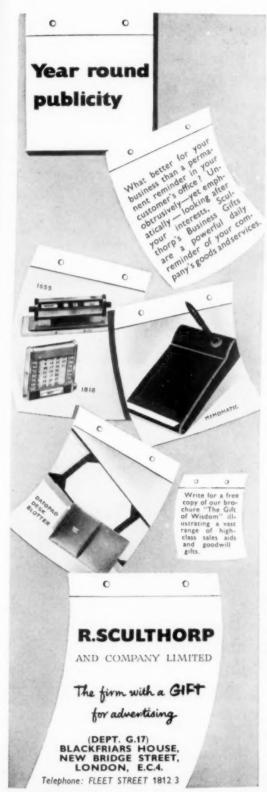
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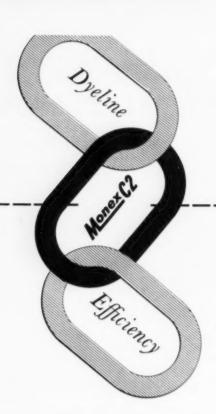
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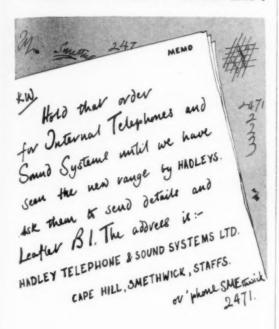
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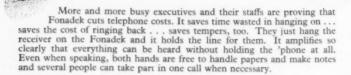
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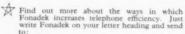
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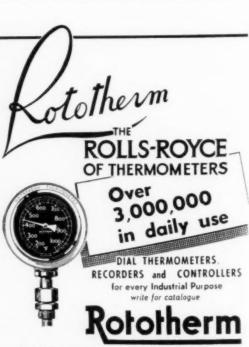
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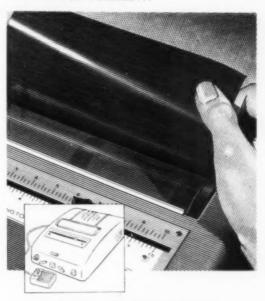
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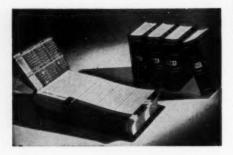
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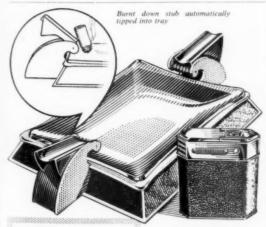
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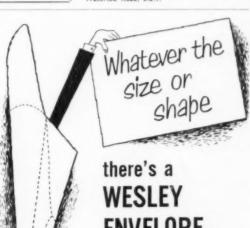
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